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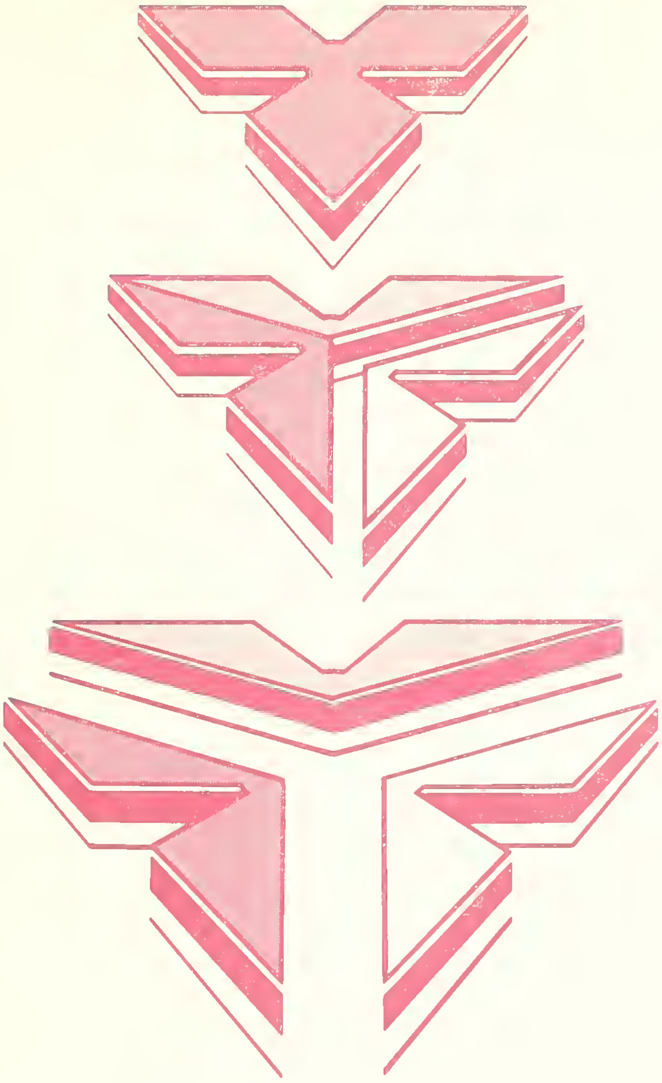

RESEARCH REPORT No.5

Public Sector Pension Funds and the Capital Markets

John Bossons and John Todd, 1987

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PUBLIC SECTOR PENSION FUNDS AND THE CAPITAL MARKETS

RESEARCH REPORT #5

Prepared By

John Bossons and John Todd

July, 1987

The Ontario Task Force on the Investment of

Public Sector Pension Funds

RESEARCH REPORT #5

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EXECUTIVE SUMMARY

This study addresses the three sets of issues identified by the Task Force on the Investment of Public Sector Pension Funds (the Task Force) as its focus. The issues pertain to: i) the transfer to the capital markets of public sector pension fund assets currently in non-marketable investments, ii) centralization of fund management, and iii) the investment of public sector pension funds to enhance economic development of Ontario. Those topics are addressed in this paper from the perspective of the impact on the capital markets.

The research for this paper consisted of three components. The first involved assembling data on the capital markets and on the past and potential future roles of pension funds in those markets. The Appendices report the data and Chapters 2 and 3 summarize the key findings. The second component involved meeting with representatives of relevant groups, including pension managers, the investment industry and plan sponsors. The third component involved analyzing the issues from the perspective of economic and financial theory.

The 1985 data on pension funds and capital markets, which are the most recent data available, show that total Canadian pension saving represents 35 per cent of total Canadian saving. The three Ontario non-marketable public sector pension funds (the TSF, PSSF and SAF) accounted for two per cent of total Canadian saving and the balance of Ontario public sector pension funds accounted for an additional two per cent of total Canadian saving. The cash flow projections developed as part of this study (see Appendix A) show that as a proportion of the total flow of Canadian saving, the three Ontario non-marketable plans will decline from 2 per cent to 1.3 per cent by 2001.

The Ontario public sector pension plans currently hold about 1 per cent of total Canadian financial and non-financial assets, including 5.5 per cent of total Canadian outstanding debt and 2.5 per cent of Canadian stocks. These holdings are unlikely to increase by more than a few percentage points, even if the non-marketable investments currently held by the TSF, PSSF and SAF are moved into marketable assets. The primary effect of a shift to the market of the non-marketable assets would be a reallocation of the investments of other investors and the displacement of some Canadian investment into the international capital market. Given the current trend to increased globalization of capital markets, the distinction between Canadian markets and foreign markets is becoming irrelevant. In the context of international financial markets, the impact of shifting the assets of the three non-market public sector pension plans is insignificant.

The only type of investment likely to be noticeably affected by a shift to market investments is Ontario government bonds. Currently the financing needs of the Ontario government are met totally by borrowing from the three non-market funds. The effect, if any, of the Ontario government going to the market to meet future needs could be beneficial in that the cost of borrowing could be reduced. The Treasurer would have increased flexibility in terms of the term structure of borrowings and the international financial markets could be tapped in response to opportunities.

The potential changes in the tax and regulatory environment affecting private pension plans make this a particularly advantageous time to consider changing public sector pension plan investment practices. At a time when private pension saving may come to be invested in a more conservative fashion, the adverse economic effects of the resultant possible decline in the demand by pensions for Canadian equities could be offset by moving public sector pension investments from government bonds to stocks.

At present, the distribution of assets in Ontario public sector pension funds differ substantially from the asset distribution of private sector funds. However, the major source of that difference is the fact that three major funds (the TSF, PSSF and SAF) hold 100 per cent of their assets as Ontario government non-marketable bonds or deposits. From the perspective of these pension funds, a shift to market investments would involve a significant change in asset distribution and most likely a significant increase in rate of return.

Chapter 4 quantifies the flows into the capital markets that would result from a move to market by the TSF, PSSF and SAF. It is clear that the capital markets will have no difficulty in absorbing the changed fund flows that would result from investing Ontario public sector pension funds through the market. Although the flows are material, they are small compared to the total projected volume of Canadian saving.

The impact of the changes that would be associated with investing Ontario public sector pension funds in diversified market portfolios would virtually all be beneficial. The markets for Canadian equities would be broadened, as would the market for Ontario provincial government bonds. Additional capital would be attracted to Canada from abroad, increasing the total amount of funds available for investment in Canada. It is likely that the cost of equity funds for Canadian business would have to become lower in order to clear the market, and this would be beneficial for Canadian firms.

From an economic viewpoint, a move to make Ontario public sector pension funds invest in marketable securities instead of non-marketable securities would only be beneficial. It would increase the supply of capital and lower the cost of funds to Canadian businesses.

The use of pension fund investment to enhance economic development is addressed in Chapter 5. It is argued that the best policy for pursuing that objective is to apply the same investment rules to public sector pension plan as apply to private sector plans. The sole concern of management should be to maximize the risk adjusted return on investment, given the anticipated cash flow requirements of the fund. Depending on the type of pension deal, that objective will serve to either increase the benefits to plan members as much as possible or reduce the cost to plan sponsors. It also will ensure that fund managers will seek to invest in opportunities that promise the best return to the investor and to the economy.

Given that view of investing for economic development, it follows that a policy of centralizing the management of public sector pension fund assets would be unwise. Centralization would tend to reduce the efficiency of the Canadian capital markets by concentrating assets. Furthermore, from the perspective of the beneficiaries of the funds, centralization does not offer significant benefits. The available evidence on the net return on investment by size of fund shows that over 95 per cent of Ontario public sector pension fund assets are in pools that already are beyond the scale where significant administrative or investment efficiencies could be expected to result from increased centralization of management.

Although the investment decisions of Ontario's public sector pension funds will not impair the efficiency of the Canadian capital markets given the current level of decentralization, they are large enough collectively for their investment decisions to affect the prices of assets traded in Canadian capital markets if they were to act in concert. It consequently matters for the Canadian economy how public sector pension assets are managed. If these funds are managed in a decentralized fashion and invested in diversified portfolios, then there is little risk of the investment of public sector pension funds having an adverse impact on the Canadian capital markets. Furthermore, if the TSF, PSSF and SAF are moved into market investments in an orderly way - for example, by not retiring existing non-market investments early - the transfer will have no detrimental effects.

Recent tax and regulatory changes affecting private pension plans will encourage private employers to switch from defined benefit plans to defined contribution plans. Such a switch is likely to result in some decrease in private pension investments in equities. In these circumstances, an increased public sector demand for equities will offset any adverse economic effects of the regulatory changes affecting private sector pension plans.

From an economic viewpoint, it is difficult to see any losers from a decision to permit all Ontario public sector pension plans to invest their assets in a diversified market portfolio. The efficiency of the capital markets would be improved. Canadian business would benefit from the increased availability of equity funds. Ontario taxpayers as well as Canadian business would benefit from the impact of a broadened market for Ontario bonds. Ontario taxpayers and/or pension plan members would benefit from the higher average return on pension assets that would be accrued over the longer run.

The benefits for the Ontario economy are enhanced if the Ontario public sector pension funds are encouraged to pursue independent investment policies on a decentralized basis. Economic benefits are also enhanced if the government does not intervene in the investment decisions and policies of public sector pension funds. The government should not play any greater role in these decisions than it does in the investment decisions of private sector pension funds.

PUBLIC SECTOR PENSION FUNDS AND THE CAPITAL MARKETS

by John Bossons and John Todd[1]

CHAPTER 1: INTRODUCTION

This study is one in a series that has been commissioned by the Task Force on the Investment of Public Sector Pension Funds (the Task Force). It examines the issues being addressed by the Task Force from a particular perspective - the impact alternative public sector pension investment policies are likely to have on the operation of the Canadian capital markets.

While the study provides a self-contained analysis of the issues from the capital market perspective, it is not intended to encompass the full range of concerns of the Ontario Government, particular public sector employers, plan beneficiaries, or the Ontario taxpayers, all of whom are important stakeholders in any policy affecting the investment of public sector pensions. The findings of this study are intended to assist the Task Force evaluate selected policy alternatives in order that they can balance the concerns of the various stakeholders with as complete information as possible.

1.1 Purpose of the Study

The Task Force has identified three sets of issues that it is addressing:

> *The* **first set** *of issues pertains to the impact which an increase in the amount of public sector pension fund assets would have on capital markets should funds, now flowing into non-marketable provincial debt instruments or the Consolidated Revenue Fund, be invested in marketable securities...*
>
> *The* **second set** *of issues pertains to the extent to which public sector pension fund assets should be managed on a consolidated or centralized basis...*
>
> *The* **third set** *of issues pertains to the extent to which the assets of public sector pension funds are, and should be, invested to further enhance the economic development of the Province.*[2]

The impact of the investment of public sector pension funds on the capital markets is relevant to all three sets of issues. The quoted statement of the first set of issues explicitly recognizes the impact on the capital markets as an important consideration in evaluating the current practice of certain public sector pension plans to invest their assets in non-marketable Ontario government securities. One clear purpose of this study is therefore to provide the analytic framework and the quantitative information needed by the Task Force to reach policy conclusions on that question.

---

[1] John Bossons is Professor of Economics, University of Toronto. John Todd is President, Econalysis Consulting Services Inc. Able assistance was provided by Pat Daley who prepared the data used in Chapters 2 and 3 and Appendices A and B.

[2] Excerpted from the Task Force's statement of the issues, which appears in the Terms of Reference for this study. Similar statements of the issues appear in other material issued by the Task Force.

Although not explicitly noted, the capital market impact of pension fund investment is also a key consideration in addressing the second and third sets of issues. With regard to the second set of issues - centralization of management - it is important to consider not only the effect on administrative efficiency but also the implications of centralization for the efficiency of the capital markets. A further purpose of this study is therefore to address the question of how centralization is likely to affect the Canadian capital markets.

With regard to the third set of issues, the impact of pension investment on the capital markets is an important concern because the capital markets are the economy's principal instrument for realizing economic growth. Hence, a third purpose of this study is to identify those guidelines for the investment of public sector pension funds which will have the most beneficial impact on the Ontario economy. The answer to that question depends critically on how alternative guidelines will affect the allocation of capital within the Canadian capital markets.

In summary, the purpose of this study is to provide the quantitative and analytic contexts within which the three sets of issues can be meaningfully evaluated from the perspective of the capital markets. That involves providing a quantitative overview of the past role of public sector pension funds in the capital markets and their potential future role. It also involves a qualitative assessment of trends in the capital markets, the Ontario economy, and the role pension funds play in the capital markets. Trends in each of those areas will affect the impact that public sector pension investment policies will have on the capital markets.

1.2 The Foundations of the Report

The research on which the report is based consisted of three components:

1. a quantitative analysis of the past and future roles of pension funds in the capital markets;
2. a survey of people with expertise in the areas of pensions and capital markets; and
3. economic analysis of the issues being addressed.

The first component involved assembling available data to provide a comprehensive picture of the role played by public sector pension funds in the capital markets. This component also involved developing projections as to their future role in the capital markets and hence the potential impact on economic development in Ontario. An important result of that task is the cash flow projections for the Ontario public sector pension plans which under the current rules would flow into non-marketable Ontario government debt instruments or the Consolidated Revenue Fund. (See Appendix C.)

The second component involved meeting with representatives of the key sectors involved either in making investment decisions regarding the investment of pension funds or in handling comparable types of investment. Those meetings provided the researchers with an improved understanding of the practical difficulties, and ways of dealing with those difficulties, that could arise as a result of the changes in pension investment policies being contemplated by the Task Force. It also provided insight into the attitudes of people in the financial industry who would be most directly affected by those changes.

The third component involved analyzing each of the issues from the perspective of economic and financial theory. This component served as the focal point for interpreting the quantitative evidence and evaluating the views of the industry representatives who participated in the meetings. Hence, this study follows the flow of the analytic approach, drawing on relevant data and industry opinion where they are relevant.

1.3 Organization of the Report

The report is divided into seven chapters, the first of which is this introduction. Chapter 2 provides a brief introduction to the Canadian capital markets and the role of pension savings within those markets. The role of pensions is considered from the viewpoint of their significance relative to other sources of savings. Supporting material for this chapter is found in Appendix A. Chapter 3 examines pension plan investment policies by reviewing available data on the investment behaviour they have exhibited historically. Supporting material for this chapter is found in Appendix B.

Chapters 4 through 6 deal with the three primary policy issues being addressed by the Task Force. The potential impact on the capital markets of a policy change which would cause the public sector pension fund assets now flowing into non-marketable provincial debt instruments or the Consolidated Revenue Fund to be invested in marketable securities is examined in Chapter 4. Chapter 5 examines ways in which the policies governing the allocation of pension fund investment can affect economic growth. Chapter 6 considers the implications of centralizing the management of public sector pension funds. The report's conclusions are summarized in Chapter 7.

In addition to the appendices mentioned above, two additional appendices are provided. Appendix C provides cash flow projections for the Ontario public sector pension funds currently invested in non-marketable Ontario government debt. Those projections provide necessary background for the assessment of the impact of the move to marketable investments which is the subject of Chapter 4. Appendix D provides information pertaining to the background meetings conducted by the researchers. The report does not specifically analyze the information gathered by means of the meetings, but draws on the comments of the industry experts where relevant throughout the study.

CHAPTER 2: THE ROLE OF PENSION SAVINGS IN THE CAPITAL MARKETS

The primary determinants of the impact of the investment of Ontario public sector pension funds on the capital markets are:

1. the flows of those pension funds, relative to net capital requirements and total capital flows, in the capital market as a whole, in specific asset types, and in individual investments;
2. the relative value of accumulated pension assets invested in the capital markets generally, in specific asset types, and in individual investments;
3. the substitutability of alternative types of assets within the Canadian capital market and internationally, and hence the capital market response to flows of pension funds into particular asset types; and
4. the differences between pension fund managers and other investors, in terms of the way they influence the business decisions of companies in which they either have or could have a significant investment.

The impact of policy changes on the capital markets and economic growth cannot be assessed without considering all four determinants. For example, a policy change could alter the allocation of pension savings dramatically yet have little impact on asset values if different types ofassets are highly substitutable. Other sources of investment will be displaced, with little effect on the net investment in any particular type of asset.

To provide a reference point for examining the impact of specific policy changes, this chapter examines the role of public sector pension funds in the Canadian capital markets in recent years (section 2.1) and projects the flows and the resulting asset accumulations into the future assuming current trends and policies continue (section 2.2). Trends in the capital markets and how they are likely to affect the future role of public sector pension funds are examined in section 2.3. Those sections deal with the first three determinants of the impact of pension fund investment. The fourth determinant is addressed in section 3.3 of the next chapter. Section 2.4 briefly recaps the conclusions which emerge from this chapter. Consideration of the implications of specific policies affecting the investment of pension assets is left for later chapters.

2.1 Public Sector Pensions and the Capital Markets: Historical Perspective

This section examines the importance of public sector pension savings by considering the contribution of pension savings to total national savings and the holdings of pension funds by type of asset. For purposes of the analysis developed in later chapters, a brief overview of the role of public sector pension savings is all that is required. A more detailed statistical profile of the role of pension funds in the capital markets can be found in Appendix A.

Table 1 shows the accumulated value of Canadian pension assets for the years 1980 through 1985. During that period, the net increase in Canadian pension savings averaged $29 billion per year. Assuming the rate of increase experienced in the first half of the decade has continued, annual Canadian pension savings will be close to $40 billion in 1987. That represents about 35 per cent of net personal and corporate savings, including pension savings. The 1985 breakdown of assets is presented in pie chart form in Figure 1.

The importance of pension savings, relative to other sources of savings, has increased greatly during the past two decades. In the early 1960's pension savings were only about 12 per cent of total net savings and in the early 1970's they accounted for about 18 per cent. Although demographic factors will work to reduce this trend in the next 20 years (see section 2.2, below), if pension benefits continue to be increased and coverage expanded, the relative importance of pension savings may increase further.

Table 1: ACCUMULATION OF CANADIAN PENSION ASSETS - 1980 TO 1985
(year end market value, billions of current dollars)

	Public Pension Plans		Employer Sponsored Plans				Personal Pension Savings		Total
	CPP	QPP	Consol. Revenue Fund	Trusteed Public & Private	Life[1] Insurers	Government of Canada Annuities	Total RRSP's	Other	
1980	18.4	6.7	28.4	51.7	21.5	0.8	14.5	1.5	143.4
1981	20.8	7.6	32.8	61.5	23.5	0.7	17.8	1.8	166.6
1982	23.7	8.4	38.6	71.9	26.5	0.7	22.2	1.5	193.6
1983	26.0	9.2	44.3	84.8	30.0	0.7	27.4	1.6	224.8
1984	28.9	9.9	50.4	96.3	32.9	0.7	32.1	1.6	252.8
1985	31.1	10.4	57.0	110.4	38.1	0.7	39.4	1.0	288.2

Notes: 1. Includes RRSP's in the general fund of life insurers.
Source: Statistics Canada, Financial Institutions Financial Statistics, various issues, Cat. 61-006
Statistics Canada, Trusteed Pension Plans Financial Statistics, various issues, Cat. 74-201.

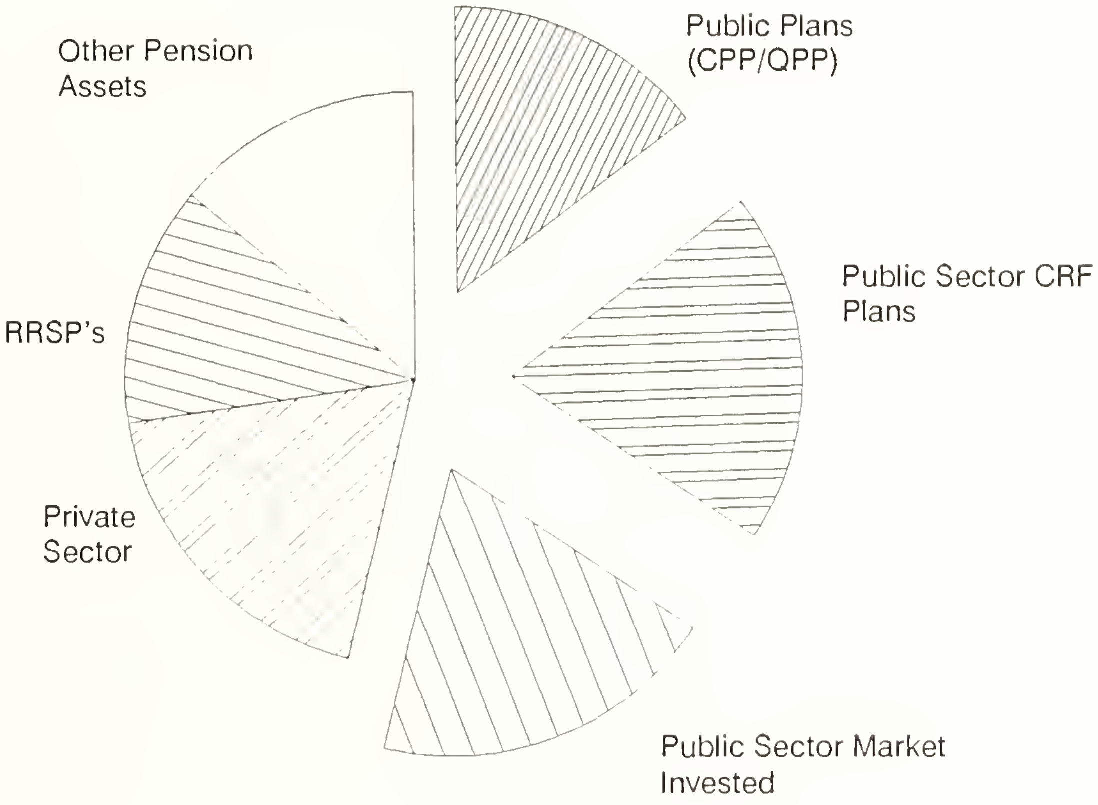
As of the end of 1985, the market value of total Canadian pension assets were $288 billion. By the end of 1987, pension assets will have passed the $360 billion mark. As Figure 1 shows, almost 20 per cent of total pension assets ($56 billion, in 1985) were held in public sector trusteed plans.[3] Another 20 per cent ($57 billion) was public sector pension assets not in trusteed plans. Non-trusteed public sector plans are consolidated revenue fund plans and plans that invest in non-marketable government debt instruments. Over 70 per cent of those assets are held by federal government pension funds.

A further 15 per cent of total Canadian pension assets ($41.5 billion) is in public plans - that is, the Canada Pension Plan (CPP) and the Quebec Pension Plan (QPP). The QPP, which represents one-quarter of the assets of the public plans and is managed by the Caisse de Depot et Placement du Quebec (the Caisse) is invested on a trusteed basis. Hence, public plans together with other public sector pension plans account for almost 55 per cent of total pension assets. Non-trusteed public sector plans, including the CPP, account for over 30 per cent of all pension assets.

---

[3] Trusteed pension plans have their assets managed by a trustee. Most large private sector plans are trusteed. Smaller plans are frequently set up with life insurance companies, in which case the assets are not trusteed; that is, they are not managed separately from the other assets of the insurance company.

Figure 1: CANADIAN PENSION ASSETS - 1985



Notes: The total value of Canadian pension assets in 1985 was $288.2 billion.
See Table 1 for the data used to derive Figure 1.

Ontario public sector pension plans had assets of $32.7 billion at the end of 1985. That represented 28 per cent of Canadian public sector plan assets. Of that amount, close to fifty per cent ($15.4 billion) was invested in non-marketable provincial debt and deposits. Hence, Ontario public sector pension assets represent 11 per cent of total Canadian pension assets and the non-marketable portion represents 5.4 per cent of the total.

The Ontario funds which currently flow into non-marketable provincial debt and the Consolidated Revenue Fund represent about 2 per cent of total Canadian savings. That amount, augmented by the rollover of existing assets, is the flow which would be redirected to the capital markets if all Ontario public sector funds trusteed pension funds were to invest in market securities. That policy change is examined in Chapter 4 and a detailed projection of the resulting cash flows to the capital market is presented in Appendix C.

The preceding discussion does not provide a complete picture of the role of pension savings in the capital markets. It also is necessary to consider the proportion of different types of assets held by pensions plans. Table 2 presents the relevant data for trusteed pension plans, which hold all pension assets invested directly in the market other than self-directed RRSP's funds.[4] Figure 2 displays the 1985 data in graphical form.

Table 2: TRUSTEED PENSION PLAN HOLDINGS OF TOTAL CANADIAN FINANCIAL ASSETS
(percent of Canadian total for each asset type)

	All Assets	Canada Bonds	Provincial Bonds	Municipal Bonds	Stocks	Mortgages
1980	3.3	9.2	14.6	7.5	6.8	4.3
1981	3.4	8.9	14.2	8.5	7.8	4.3
1982	3.7	9.1	14.4	8.3	8.8	4.4
1983	4.1	10.3	15.0	9.0	11.1	4.1
1984	4.3	11.9	14.7	9.2	11.5	3.8
1985	4.4	12.9	15.4	8.6	11.8	3.5

Source: Statistics Canada, Trusteed Pension Plans Financial Statistics, Cat. 74-201, various issues.

Trusteed pension plans held 4.4 per cent of total Canadian financial assets in 1985. But their share of holdings of certain asset types was much higher: about 14 per cent of outstanding government debt (federal, provincial, and municipal, marketable and non-marketable debt), 20 per cent of marketable government debt, 10 per cent of corporate bonds, and almost 12 per cent of Canadian stocks. Public sector plans, including the plans of educational institutions[5] held 100 per cent of non-marketable provincial debt,[6] about 9 per cent of marketable government bonds outstanding and about 5 per cent of equity.

---

[4] Reliable data are not available on the holdings of RRSP's. Information on self-directed plans is particularly sparse.

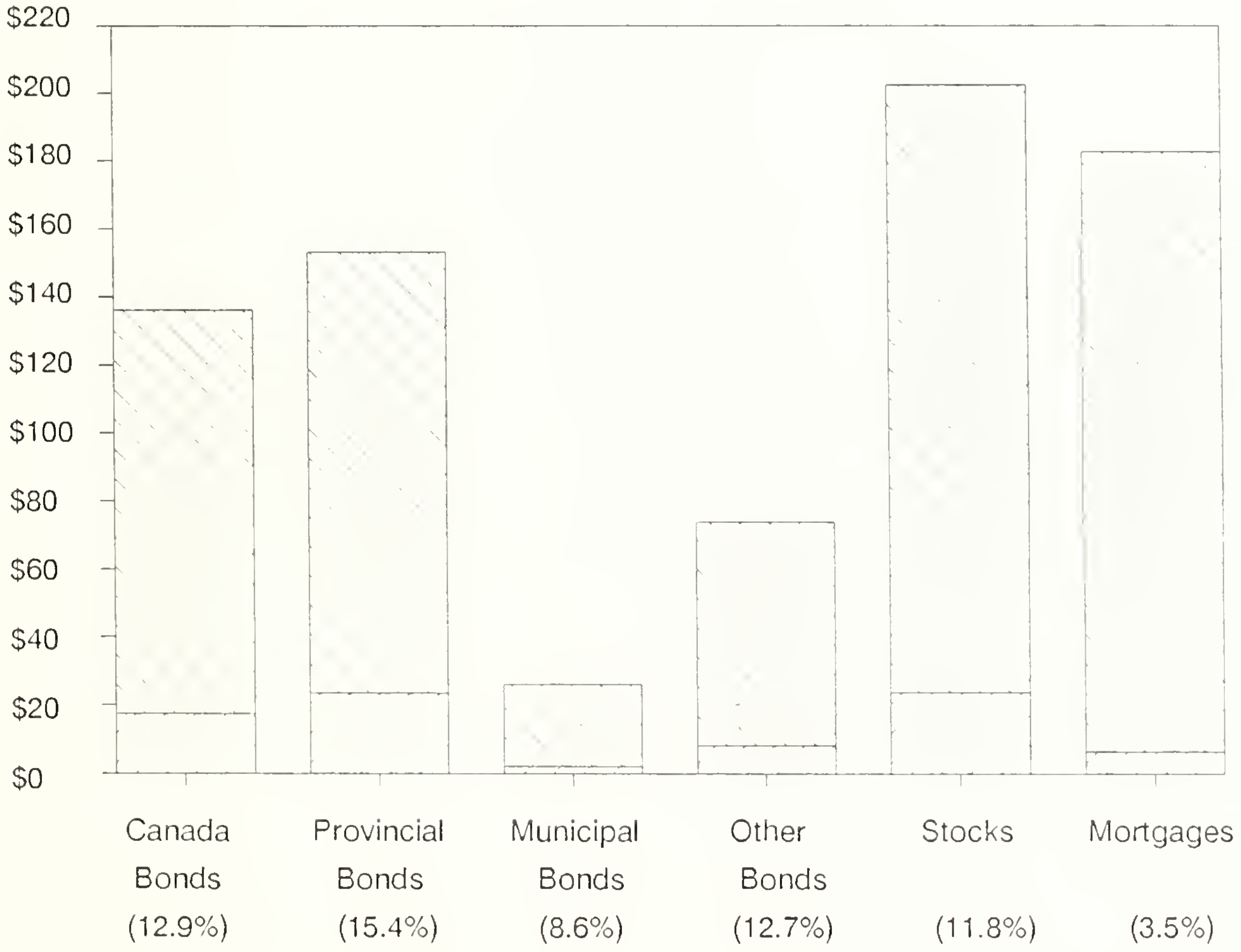
[5] Statistics Canada considers colleges and universities to be private institutions; hence, they treat their pension plans as private sector plans. The Task Force considers them to be public sector plans; hence, they are included with Ontario public sector pension plans in this report.

[6] At the federal level, Canada Savings Bonds also are non-marketable government securities; hence, public sector pension plans do not own 100% of non-marketable government debt at all levels.

Table 2 shows that the share of financial assets held by pension funds increased thirty percent in the five years from 1980 to 1985. That is the consequence of pensions accounting for a high proportion of annual savings.

As of the end of 1985, Ontario public sector pension plans held about $15.4 billion in non-marketable government debt, $6.0 billion in marketable government and corporate debt and $7.5 billion in stocks. That represents almost 15 per cent of non-marketable government debt, but only two per cent of total marketable

Figure 2: HOLDINGS OF TRUSTEED PENSION PLANS - 1985



Notes: The vertical bars show the total outstanding values of each type of asset. The bottom segments of each bar represents the portion held by trusteed pension plans.
The vertical axis is in $billions.
The percentage of assets held by trusteed pension funds for 1980-85 are shown in Table 2.

bonds outstanding and 3.5 per cent of total Canadian equities. They held about 5.5 per cent of total government and corporate debt.[7]

With regard to the role of pension investment in the equity market, it should be noted that the Toronto Stock Exchange (TSE) reports that about two-thirds of the total value of outstanding shares of the TSE 300 companies is floating stock.[8] Consequently, as of the end of 1985, Ontario public sector pension funds held approximately 3.6 per cent of the value of the floating portion of Canadian stocks, assuming the ratio of floating stocks to control blocks is the same for all Canadian stocks as it is for the TSE 300.

2.2 Public Sector Pensions and the Capital Markets: Future Projections

The previous section shows that pension savings have accounted for an increasing share of total savings in recent years and currently exceeds one-third of net savings. This section examines the implication of this trend over the next twenty years. The analysis utilizes the national projections of the medium-term prospects for the Canadian economy based on a revised version of FOCUS,[9] estimated from the 1981-base national accounts.

It appears that there have been no attempts to project pension savings for the next 20 years, which is the time horizon being considered in this study. No doubt, the absence of projections is due in large measure to the number of unpredictable factors which determine the amount of pension savings. For example, government policies regarding such matters as the tax treatment of pension savings and the rules governing private and public sector pensions could significantly affect both pension coverage and the average level of benefits. The attitude of unions regarding the importance of pensions as a bargaining item will also be an important determinant of future flows of pension savings. Despite the uncertainty involved, an adequate indication of the scale of future pension savings can be obtained for purposes of this study by extrapolating from available information with a few assumptions.

Appendix C projects the cash flows for the three Ontario public sector pension plans which hold non-marketable government securities. They account for 45 per cent of the assets of the total Ontario public sector pension plans. Based on the actuarial projections of contributions and benefits, Ministry of Treasury and Economics interest payment schedules for pre-1987 non-marketable debt, and the projected income on post-1987 investments as estimated in the appendix, the net pension savings for the three plans averages $2.3 billion annually (constant dollars) for the 20 years 1988 to 2007.[10] See Table 3, below.

[7] The data used for the preceding calculations are drawn from Appendix B, the Task Force data on Ontario public sector pension plans, and the Bank of Canada Review, Occasional Table K8, Bonds Outstanding (October 1986) and Occasional Table K6, Trusteed Pension Plans: Assets (January 1987).

[8] The TSE defines floating stock as stock not held by a control block, where a control block is a block of shares representing more than 20 per cent of voting shares of a company held by individuals or corporations which are related through family or business ties. The availability of shares in control blocks is restricted.

[9] FOCUS is the macroeconomic model of the Policy and Economic Analysis Program at the Institute for Policy Analysis, University of Toronto. The projections reported in Peter Dungan, "National Projections Through 2001: Base Scenarios and Alternatives," Policy Study No. 87-1 are used.

[10] See Table B-13 in Appendix B. The net pension savings for the three plans is the total new investable funds minus principal repayments on non-market debt. The yearly cash flows stay within about 5 per cent of the average.

Total savings, as projected by FOCUS are shown in Table 3 for the years 1987 through 2001. As a percentage of total personal and corporate savings the net savings associated with the three non-market Ontario plans declines from 2.0 per cent in 1987 to 1.3 per cent in 2001. As a percentage of personal savings, the net savings of the three plans declines from 5.9 to 4.4 per cent.

Table 3: PROJECTED PENSION SAVINGS VERSUS TOTAL SAVINGS
(Billions 1987 dollars)

			Ontario Public Sector Pension Plans (TSF/PSSF/SAF)				
Year	Total Canadian Personal & Corporate Savings (A)	Total Canadian Personal Savings (B)	Total Investable Funds (C)	Principal Repaym't Non-mark. (D)	Net Pension Savings (E)	Ratio of TSF/PSSF/SAF Savings to Total Canadian Savings (E/A)	Ratio of TSF/PSSF/SAF Saving to Total Personal Savings (E/B)
1988	113.89	39.44	2.34	0.021	2.31	0.020	0.059
1989	118.91	40.41	2.29	0.048	2.25	0.019	0.056
1990	124.40	43.43	2.30	0.022	2.27	0.018	0.052
1991	129.57	45.85	2.36	0.043	2.31	0.018	0.050
1992	133.66	47.62	2.84	0.492	2.35	0.018	0.049
1993	138.28	48.75	2.60	0.242	2.36	0.017	0.048
1994	142.99	50.37	2.50	0.126	2.37	0.017	0.047
1995	147.30	51.66	2.66	0.268	2.39	0.016	0.046
1996	152.06	52.20	2.59	0.198	2.40	0.016	0.046
1997	156.70	52.60	2.72	0.304	2.42	0.015	0.046
1998	160.48	53.03	2.72	0.302	2.42	0.015	0.046
1999	164.42	53.13	3.02	0.619	2.40	0.015	0.045
2000	168.54	52.95	2.96	0.588	2.37	0.014	0.045
2001	172.41	52.63	2.77	0.449	2.32	0.013	0.044

Sources: Dungan (1987, Tables 3 and 7) and Appendix C of this study.

Assuming that the ratio of the net savings for the three non-market plans to all Ontario public sector plans will be 0.45, corresponding to the current ratio of their assets, then total Ontario public sector pension saving will account for 4.5 per cent of total personal and corporate savings in 1987, declining to 2.9 per cent by 2001.

It should be noted that the actuarial projections of contributions and benefits for the three Ontario non-market plans assume constant contribution rates, no net growth in active plan membership, and benefits as currently contracted. For pension savings to still be 2 per cent of total savings by 2001, contribution rates and coverage would have to increase enough to increase net pension savings, as a percent of wages and salary, by 50 per cent.

The cash flow projection also assumes an inflation-adjusted personal rate of saving of 8 per cent for 1987 through 2001. Given the expected levels of government debt and inflation, the implication is that the measured saving rates would have to be well above 10 per cent. Dungan observes:

> *our judgment as to the likely level of the inflation adjusted rate through the next decade may be optimistically low; David Foot points out that the baby-boom generation is now entering their high savings period, accumulating both housing and pension assets; the result could well be a demographic based surge in the underlying real saving rate.*

If the underlying real saving rate is underestimated, the proportion of total saving accounted for by pension saving would be further reduced.

Four conclusions emerge from the preceding projections of the value of pension savings relative to total savings and to total financial assets:

1. If all Canadian Consolidated Revenue Fund plans and the universal plans (CPP and QPP) were converted into trusteed plans investing in marketable securities, the share of marketable financial assets held by pension plans would be almost 90 per cent greater than they are at the present time.
2. If all pension assets were invested as the assets of trusteed pension plans are currently,[11] then pension plans would own over 22 per cent of Canadian stocks, as opposed to the 11.8 per cent currently held.
3. If all pension asset were invested as private sector trusteed plan assets are currently, they would hold 28 per cent of all Canadian stocks or almost 150 per cent more than their current holdings.
4. If only Ontario's non-market public sector pension funds (not the non-market funds of the federal or other provincial governments and not the universal plans) were to invest in marketable securities in the future, and their assets were invested as trusteed plans are currently, the share of Canadian stocks held by pension plans would increase by only one-seventh, from 11.8 to 13.3 per cent.

2.3 Trends in the Capital Markets

The role that pension funds play in the Canadian capital markets has been changing over time and will continue to change in the future. The changing role is not only the result of the increasing share of total Canadian financial assets held by pension funds, it also results from the dramatic restructuring of the Canadian and international financial industries that is currently underway. This section examines some of the important trends in the financial industry that are affecting the role of Ontario's public sector pension funds in the Canadian capital markets and in the Ontario economy. Discussion of policy trends affecting pension investment directly is deferred to section 3.4.

The capital market trends are relevant to the interpretation of the quantitative analysis of the role of pension funds presented in the preceding sections. Specifically, this section considers whether investment by public sector pension funds displaces or augments other sources of investment. If pension fund investment primarily displaces other investment, then the net effect of a reallocation of pension investment on the market value of the affected securities and the cost of capital of affected issuers will be negligible. However, to the extent that pension investment augments other investment, a reallocation of pension investment will decrease the supply of capital to the issuers of the securities they sell and increase the supply of capital to the issuers of the securities they buy. The cost of capital of the former would be increased while it would be decreased for the latter.

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[11] Chapter 3 discusses the asset distribution of pension plans.

One relevant trend that has received much attention is improved access to international markets. The "global market" with 24-hour trading in certain currencies, commodities, bonds and equities is developing more slowly than some anticipated a few years ago, but the trend is nevertheless well-established. The securities of many Canadian corporations are now traded in New York, London and Tokyo as easily as they are traded in Toronto or Montreal. Major international securities dealers have developed markets for Government of Canada bonds so extensively that the volume of trading on foreign markets now rivals domestic trading. In large measure, this trend is the inevitable result of developments in information technology which have not only opened a window through which we can observe news events in distant countries, but also have made foreign financial news almost as accessible as local news.

Increased access to the international capital markets for both issuers and investors also has been facilitated by the development of new financial instruments, such as currency and interest rate swaps, which permit market participants to hedge against risks that until recently impeded international investing and borrowing. This development has gone hand-in-hand with the growth of a new breed of international financial institution with the capital and expertise to do deals that were unimaginable a decade ago. Today's securities dealers include merchant bankers with the capital to serve as principals in billion dollar deals. In addition, banks and other financial institutions are participating more aggressively in developing new ways to provide borrowers with lower cost financing. New financial instruments are changing the way capital is raised in the domestic market as well as in the international market. For example, private placements have become a very popular way to raise capital, largely because they reduce the overall cost of capital and the risk for issuers.

With the erosion of the barriers separating Canadian and foreign financial markets, the competitive pressure on Canadian financial institutions has increased. The financial industry has responded to the challenge by becoming more aggressive and innovative in competing with their domestic, as well as their foreign, rivals. Separation of the so-called "four pillars" - banks, trust companies, insurance companies and securities dealers - has lessened significantly. While some innovations have not been well received in the market, others have quickly been accepted as important improvements in the way capital is raised in this country. Most investors and issuers have found the new opportunities attractive and expect that many of the innovations that will undoubtedly arise in the next few years will be equally beneficial.

An important trend that has emerged from the competitive innovation of recent years is the trend to securitization of financial instruments. For example, some mortgages and loans have been securitized which means that they have been packaged so that they can be traded much like corporate stocks and government bonds. In effect, the purely financial characteristics of a financial instrument - its cash flow - is isolated from the administrative tasks associated with it - such as making the original loan and collecting monthly payments from individuals. The resulting securitized loan or mortgage is highly substitutable for traditional securities like stocks and bonds.

Both the globalization trend and the securitization trend have the effect of increasing the efficiency of the Canadian capital markets. As the capital markets become more efficient, the impact of a given change in the investment behaviour of public sector pension funds is reduced. Although the efficiency of the capital markets cannot be precisely measured, industry experts generally agree that the Canadian debt and equity (TSE and

MSE listed shares, at least) markets are highly efficient relative to foreign markets, with the exception of the three international financial centres in New York, Tokyo and London. Also the effect of the current trends in the capital markets are unambiguous.

Market efficiency results in part from all investors being small relative to the total market. Hence, if a particular investor, say one of the Ontario public sector pension funds, were to reallocate its investment, the action would be small relative to overall market activity. Because most of the assets of public sector pension funds are likely to be invested in securities that are traded actively in the international market - specifically, government bonds and the stocks and bonds of major Canadian and foreign corporations - the investment decisions of the pension funds will not affect the value of those securities or the cost of capital for those corporations and governments. The markets for those securities are quite efficient. Furthermore, as the trend to increased globalization of the capital market continues, an increasing portion of Canadian financial assets will be actively traded in international markets.

Market efficiency also relates to the substitutability of financial instruments. If different types of financial assets are highly substitutable, then a large flow of funds into one asset type will displace other investment. The increased demand for particular assets will only have to increase the asset value a small amount, thereby decreasing the expected return a small amount, to induce other investors to sell. The trend to globalization is increasing the substitutability of securities issued by governments and corporations in different countries and issues denominated in different currencies. The trend to securitization is increasing the substitutability of financial instruments which in the past were not substitutable, and in many cases not marketable. The consequence is that the efficiency of the capital markets generally is increasing, which implies that the impact of policy changes affecting the way public sector pension funds are invested is significantly less than it was a decade ago and it will continue to decline in the foreseeable future.

The trends to increased access to financial markets and more vibrant competition in both the domestic and international markets has important implications for policies regarding the investment of Ontario public sector pension funds. One implication is that policies which restrict the investment options of pension plans are foreclosing more opportunities then ever before. For example, the requirement that certain public sector pension plans invest in non-marketable provincial securities, which is the topic of Chapter 4, is of increasing concern. From the perspective of the cost of financing Ontario's public debt, the opportunities lost when the government has no option but to meet its financing requirements by issuing non-market instruments to pension plans may be costly. The simple fact that the Ontario Government loses control of the term structure of its debt and must pay interest at rates that are set by predefined formulae, raises the question of whether they could finance on better terms in the domestic or foreign capital market. Ontario may be losing substantial benefits because it is unable to develop an on-going international market for Government of Ontario securities.

Furthermore, from the perspective of public pension plan beneficiaries and future taxpayers who may benefit if pension plans are able to increase their risk-adjusted returns, restrictions on the investment opportunities available to them in the domestic and the international capital markets is of concern. The most provocative aspect of the question is the fact that the starting assumption of financial theory is that both the Government as borrower and the pension funds as investors should benefit from increased choice. Chapter 4 explores the benefits and costs of terminating the policy of requiring the assets of certain public sector pension plans to be invested in non-marketable government securities in terms of the impact that policy change would have on the Canadian capital market.

A further implication of the trend in international markets is that international capital flows are becoming even more sensitive to differences in the risk-adjusted returns available in different countries than ever before. The more freely capital flows internationally, the more difficult it is to lower the cost of capital in Ontario by increasing the availability of investment funds within the Ontario economy. Hence, the prospect of boosting the Ontario economy by restricting the way pension funds are invested is less than it ever was before. That question is addressed in Chapter 5.

Given the broad trends in the financial industry, pension policies could have implications which reach beyond those who are directly affected. For the Canadian financial markets to successfully operate in a world dominated by the major international financial centres, it must maintain sufficient breadth and depth to be efficient. The Canadian market could only benefit from the entry of new major institutional investors, which would happen if the three public sector pension funds which currently hold only non-marketable government securities were to become active investors in the debt and equity markets. To continue to restrict the investment opportunities of public sector pension funds would be inconsistent with other Ontario policies affecting the financial markets which are aimed at redesigning the regulatory structure to increase both domestic and foreign competition and permit greater innovation to take full advantage of the current trends in the international capital markets.

With respect to the data presented in earlier sections of this chapter, the important point is that the current internationalization trend in the capital markets is making it increasingly unrealistic to consider the Canadian capital markets to be distinct from the international markets. The trend to increased competition within the domestic financial industry, as illustrated by the breaking down of the four "pillar structure" and the trend to securitization of many new types of assets is reducing the fragmentation of the capital market and increasing the substitutability of different financial instruments. More than ever before, factors which affect the behaviour of only selected investors - such as changes in the rules governing the investment of public sector pension funds which will affect only them - will stimulate investment flows that displace, rather than augment, other investment.

As a consequence, the measures of the role of pension investment presented in the previous two sections, must be interpreted without losing sight of the fact that the in general Canadian capital markets are highly efficient. They overstate the influence pension investment has on the availability of capital and hence on the cost of capital in most segments of the Canadian capital markets. Nevertheless, it must also be recognized that there are some sectors, such as venture investing, which are relatively isolated from the international market and which are not considered by most investors to be substitutable for other investment, hence major capital flows of pension funds could have a significant impact in those sectors.

2.4 Conclusions

This chapter addresses three questions:

1. How significant are the flows of pension savings relative to other sources of savings?
2. How significant are the accumulated assets of pension funds?
3. To what extent does pension fund investment displace, rather than augment, other sources of investment?

With regard to the first question, it is found that total pension saving represented 35 per cent of total saving in Canada in 1985. The flow into Ontario public sector pension plans accounted for about four per cent of total Canadian saving and the three non-marketable funds - the TSF, PSSF and SAF - accounted for only two per cent. However, the significance of the savings flow associated with those three funds relative to total Canadian saving is expected to decline by about one-third (from 2 per cent to 1.3 per cent) by 2001.

The ratio of pension saving to total saving is an indicator of the maximum possible effect of pension savings. The actual effect is likely to be much smaller because domestic saving is only one source of the investment flow of funds. In particular, the flows between the domestic and foreign capital markets could easily overwhelm any effects that pension saving may have within the increasingly global capital markets. Furthermore, in light of Ontario's recent initiatives to open up the Toronto-based financial industry, it would be both inconsistent and possibly harmful to the domestic industry to continue a policy of by-passing the capital markets with one-half of Ontario's public sector pension assets.

Looking at the question of the significance of the flow of pension funds from the perspective of particular asset types, it is found that Ontario public sector pension funds account for all current Ontario government borrowing exclusive of Government guaranteed Ontario Hydro borrowing. Ontario meets its full borrowing requirement with the flows from the three non-marketable funds, without recourse to the CPP funds which also are available to it. But only a small fraction of the supply of other asset types - other government and corporate bonds, mortgages and stocks - is absorbed by Ontario public sector pension funds. While they could be significant buyers of particular issues of securities if they were directed to do so by government policy, that would rarely, if ever, occur in the normal course of managing the assets of a pension fund so as to maintain a soundly diversified portfolio. The only type of asset which is likely to be affected by changes in policies that affect the way Ontario public sector pension funds invest is Ontario government bonds. Without the supply of funds from the three non-marketable pension funds the Ontario government would have to turn to borrowing CPP funds and/or issuing marketable debt in the domestic and foreign bond markets.

With regard to the second question - the significance of the accumulated assets of Ontario public sector pension funds - it is shown that they hold about one per cent of total Canadian financial assets, 5.5 per cent of total Canadian debt outstanding and 2.5 per cent of total Canadian equities. Given the high proportion of net saving accounted for by pension saving, the proportion of Canadian assets held by Ontario public sector pension funds will increase over the next two decades. However, since the annual flow of Ontario public sector pension saving is expected to decline by a third as a proportion of total Canadian saving, their holdings as a proportion of total Canadian financial assets is unlikely to increase by more than a few percentage points.

The third question, to what extent does pension investment displace rather than augment other sources of investment, basically asks whether or not the Canadian capital market is efficient. Because the Canadian capital markets are in general quite efficient, much of the potential impact of a reallocation of pension investment will be offset by the displacement of other investment, provided pension investment is diversified. However, when pension investment is not diversified, it is significant enough to displace all other investment. That is the case with the non-marketable funds which currently meet the entire borrowing requirements of the province of Ontario. Clearly, efficient markets cannot be maintained under those conditions.

The foregoing comments underline the conclusion that the importance of public sector pension funds in the capital markets is increasing. While their presence in the capital markets is not inconsistent with market efficiency, they are significant enough that the way they are invested could have an impact on the Canadian economy. Hence, any improvement in the economic productivity of Ontario public pension funds will be beneficial for all Canadians.

CHAPTER 3: PENSION PLAN INVESTMENT POLICIES

This chapter examines the current distribution of assets of the Ontario public sector pension funds and compares them to the asset distributions of other Canadian public and private sector pension funds.[12] This review provides insight into the effect of shifting the non-marketable assets of public sector funds into the capital markets. It can be expected that after a transitional period to build up their expertise and liquidate their non-market investments, the asset distribution of pension funds which currently hold non-marketable assets would be broadly similar to the asset distribution of other market-oriented trusteed plans.

Of course, the future asset distribution of those pension plans cannot be precisely predicted. The asset mix of most diversified portfolios changes over time as economic conditions and the perceptions of the fund managers regarding investment opportunities change. Furthermore, pension fund investment policies reflect the risk-return preferences of those who control investment decisions. Because the risk preferences of plan members and sponsors may differ, who controls investment policy may affect the decisions that are made. Control over investment policy, and also exposure to the risks and rewards associated with different investment strategies, is determined by how the plan is set up. Consequently, in the chapters that follow it is recognized that this overview of the current asset distribution of market-oriented pension plans is only a rough indicator of the investment policies of plans which invest in market securities in the future.

Section 3.1 examines the distribution of assets of Canadian private and public sector pension plans generally. Section 3.2 narrows the focus to Ontario public sector pension plans, detailing the asset distributions of the six largest funds and three groupings of the smaller funds surveyed by the Task Force. Section 3.3 addresses the issue of the role played by pension fund managers in the business decisions of the companies in which they invest. The conclusions emerging from the discussion are summarized in section 3.4.

3.1 Distribution of Pension Investments by Asset Type

Table 4 shows the distribution of the total assets of Canadian trusteed pension plans. Government bonds account for almost 40 per cent of their assets and stocks account for just over 25 per cent. Other bonds, mortgages and other assets together account for just over 30 per cent of assets.

Certain trends in the asset distribution of trusteed pension funds are evident. Since 1980, the percentage of assets invested in corporate bonds declined one-third and the share of assets in mortgages declined almost 50 per cent. The share of assets invested in government bonds increased slightly from 1980 to 1985 (and increased steadily since 1981). Offsetting the declines in the holdings of fixed income securities, the proportion of funds invested in stocks climbed 30 per cent and the small investment in real estate doubled over the five year period from 1.1 per cent to 2.3 per cent of total assets.

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[12] Appendix B is a detailed survey of available data on the distribution of assets of pension funds. This chapter draws on the appendix without reproducing all of the quantitative material presented there.

The shift from fixed-income securities to equities in part results from the investment strategy of fund managers. The bond market performed very well in the 1980 to 1985 period relative to the equity market. Many managers increased the percentage of equities held to realize gains in the bond market and to be prepared for an improvement in the relative performance of equity investments.[13] In addition, some large pension plans, OMERS being one of them, have changed from plans that hold only non-marketable government securities to trusteed plans that invest in marketable debt and equities. During the transition from 100 per cent debt to their desired portfolio, there has been a shift of assets from debt to equity which has biased the aggregate trend.

Table 4: ASSET DISTRIBUTION OF TOTAL TRUSTEED PENSION PLANS
(per cent of assets)

	Government Bonds	Other Bonds	Stocks	Mortgages	Real Estate	Other
1980	37.7	11.4	20.4	11.1	1.1	18.2
1981	35.9	10.6	21.8	10.1	1.3	20.3
1982	36.2	10.0	22.1	9.0	1.7	20.9
1983	37.0	9.0	25.6	7.8	2.1	18.5
1984	37.7	7.8	26.1	6.7	2.4	19.4
1985	39.3	7.6	26.6	5.8	2.3	18.5

Sources: Statistics Canada, National Income and Balance Sheet Accounts, 1986, Cat. 13-214
Statistics Canada, Trusteed Pension Plans Financial Statistics, various issues, Cat. 74-201.

The asset distributions of particular types of pension plans differ significantly from the total Canadian distribution presented in Table 4. As is shown in Appendix B, trusteed public sector plans had 51 per cent of their assets in government marketable and non-marketable bonds in 1985; whereas private sector trusteed plans held only 28 per cent of their assets in government bonds. Public sector plans had 28 per cent of assets in non-government bonds and 21 per cent in ownership type assets; whereas, private sector plans held 36 per cent of assets in non-government bonds and 36 per cent in ownership type assets.

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[13] These comments and others in this section which explain the trends in the data are based on the views of industry participants. Their views were solicited by the authors through interviews which were conducted as part of this study. Appendix D lists the people interviewed.

In the 1980-85 period, however, the asset distributions of public and private sector pension plans have become more similar. In particular, the government bond holdings of public sector plans has been on the decline while the holdings of public sector plans has been increasing. Both public and private sector plans have been decreasing their respective percentages of assets invested in other bonds and mortgages, while increasing the percentage of assets invested in stocks and real estate.

By 1985, the asset distributions of private sector trusteed plans was quite similar to that of the trusteed plans of federal crown corporations.[14] The trusteed plans of provincial and municipal governments and their crown corporations, however, held significantly more government bonds than private trusteed plans (45.2 versus 27.6 per cent), but the difference was much less than in 1980 when 57.5 per cent of their assets were government bonds versus 21.4 per cent for private sector trusteed plans.

Interestingly, the Individual Funds of the Caisse de Depot matched the trusteed pension plans of all Canadian provincial and municipal governments in terms of the percentage of asset invested in government bonds almost exactly. However, the percentage invested in stocks by the Individual Funds of the Caisse was much higher (32.0 per cent for the Caisse versus 19.3 per cent for provincial and municipal plans).

Given these trends, it would appear reasonable to expect that if there is a policy change so that the Ontario public sector pension plans that currently hold non-marketable provincial bonds invest in marketable securities, then the eventual asset distribution would be similar to the current asset distribution of private sector pension funds. The difference is illustrated by Figures 3 and 4, on pages 26 and 27, which compare the asset distributions of private sector trusteed pension funds and Ontario public sector funds. The assumptions used for the cash flow projections and asset distributions of those plans - as calculated in Appendix C and used in the analysis of Chapter 4, are:

- investment in fixed income securities (government and corporate bonds and mortgages) will be 45 per cent of assets once the transition is complete,
- equity investment (including real estate) will be 40 per cent of assets, and
- the remaining 15 per cent of assets will be in other investments (cash, short-term notes, venture capital, etc.).

Those assumptions imply that the distribution of assets for the plans affected by the policy change will include about 8 percentage points less in fixed income securities than the percentage held by all Canadian trusteed pension plans in 1985. Their holdings of equity investments would be 11 percentage points higher and their holdings of other investments would be 3 percentage points lower than the 1985 holdings of all Canadian trusteed pension plans.

In order to determine the significance of this policy change in the context of the total asset mix of Ontario public sector pension plans, the next section examines the relative size of the non-market plans and the asset mix of the market-oriented Ontario public sector plans.

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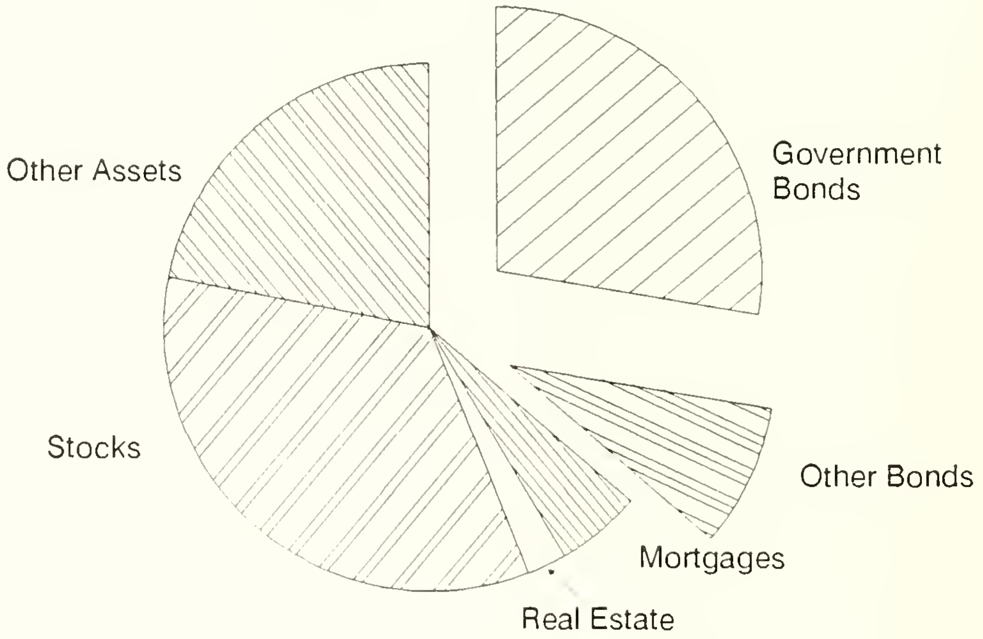
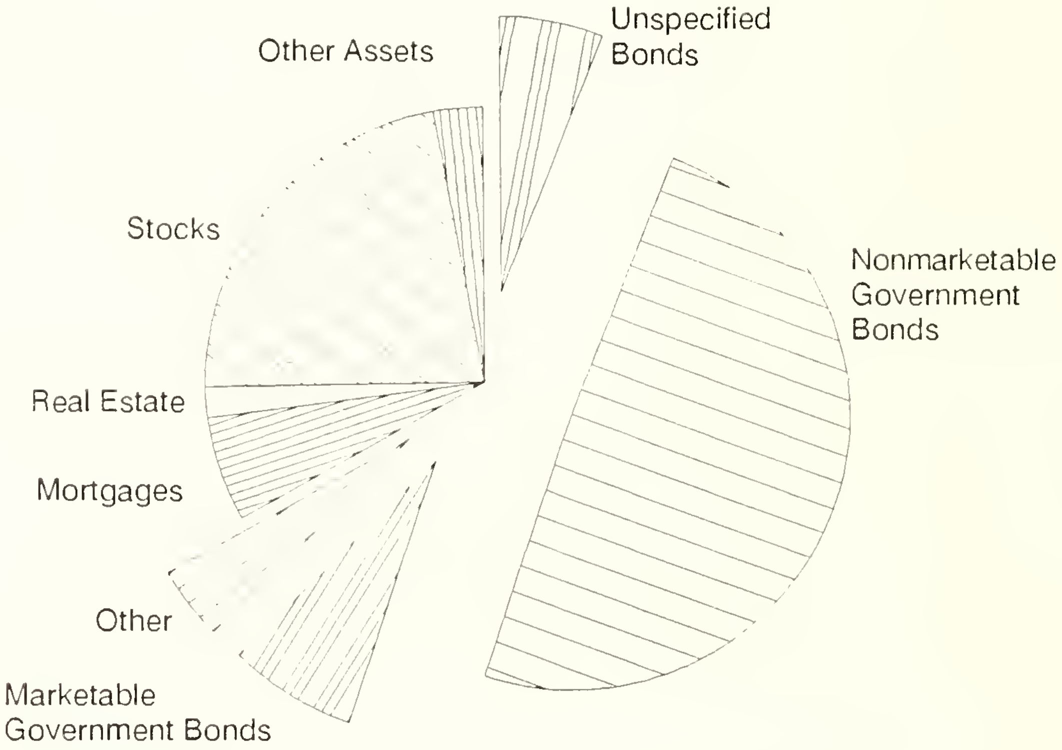
[14] See Appendix B for tables which show the distribution of assets for each of these types of pension plans.

Figure 3: DISTRIBUTION OF THE ASSETS OF PRIVATE SECTOR TRUSTEED PENSION FUNDS (1985)



Note: Derived from data presented in Appendix B.

Figure 4: DISTRIBUTION OF ASSETS OF ONTARIO PUBLIC SECTOR PENSION FUNDS (1985)



Note: Derived from data presented in Appendix B.

3.2 Ontario's Public Sector Pension Plans

This section examines the distribution of assets of Ontario public sector pension plans. Table 5 shows the asset distributions of the six largest Ontario plans and the smaller plans by category. The TSF, PSSF and SAF invest 100 per cent of their assets in non-marketable Ontario government securities or transfer their funds to the Consolidated Revenue Fund. They account for 45 per cent of Ontario public sector pension assets. The only other plan holding non-marketable government bonds is OMERS with 16.9 per cent of its assets ($1.3 billion) in that form as of December 1985. However, OMERS is converting its non-marketable bonds to marketable securities as the old bonds mature.

The other two major plans, HOOPP and Ontario Hydro, each hold about 45 per cent of their assets in equities and 40 per cent in bonds. OMERS also invests almost 45 per cent of its assets that are not still in non-marketable bonds in equities, however, only 25 per cent of its marketable assets are invested in bonds. In

Table 5: ASSET MIX OF ONTARIO PUBLIC SECTOR PENSION FUNDS (1985)

Pension Fund	Non-market Bonds	Other Bonds	Mortgages	Equity	Other	Total Assets Market Value
	--------------(percent of total assets)------------------					($billions)
Teachers	100.0					8.82
PSSF	100.0					4.03
SAF	100.0					1.30
Total TSF/PSSF/SAF	100.0					14.15
OMERS	16.9	19.6	17.6	36.1	9.8	6.97
HOOPP		37.0	8.1	45.3	9.5	3.20
Ontario Hydro		38.1	8.5	46.8	6.6	2.89
Total OMERS/HOOP/Hydro	8.5	28.5	13.0	41.0	9.0	12.24
Educational Inst. (24 of 38)	4.2	35.7	6.2	44.4	9.5	3.36
Local Government (6 of 33)		39.0	7.9	41.2	11.9	2.12
Health Related (4 of 11)		45.8	0.2	45.1	8.9	0.24
Other (8 of 15)		54.4	5.7	32.4	7.5	0.56
TOTAL (48 of 103 funds)	49.1	17.8	6.1	22.4	4.5	32.82

Source: Task Force on the Investment of Public Sector Pension Funds, Survey

Notes:
1. All pension funds did not report their asset distribution. The numbers in brackets for each category of pension funds show the number of funds reporting their asset distribution out of the total number of funds in the category.
2. Reported assets are for funds including those not reporting their asset distribution.

part, that may be attributable to the fact that 17 per cent of its assets are still invested in non-marketable government bonds; in part, it may be attributable to its relatively high investment in mortgages. OMERS holds over 20 per cent of its marketable assets as mortgages, primarily in socially assisted housing developments. If the asset distribution of Ontario's largest market-oriented public sector pension plans is compared to that of private sector pension plans (see Appendix B), they are found to be quite similar except that the public sector plans have much less in the "Other" category and proportionately more in equities and bonds.

Table 5 also shows the asset distribution for those smaller Ontario public sector funds which reported their asset holdings to the Task Force, divided into four categories: educational institutions, local government, health related plans other than those in HOOPP, and other plans. The 24 plans of educational institutions and the 6 local government plans reported an asset distributions that are similar to the larger plans. The 4 health related plans reported more invested in bonds (45.8%) and other funds reported holding less in equities (34.4 per cent) and more in bonds (47.2 per cent).

Table 6: FOREIGN EQUITY INVESTMENT OF CERTAIN ONTARIO PUBLIC SECTOR PENSION FUNDS (1985)

PENSION FUND	Canadian Equitiies	Foreign Equities	Canadian Equities	Foreign Equities	Market Value of Total Equities
	(% of total equities)		(% of total assets)		($billions)
OMERS	66.5	33.5	24.0	12.1	2.22
HOOPP	83.0	17.0	37.5	7.7	1.45
Ontario Hydro	76.5	23.5	35.8	11.0	1.35
Educational Inst. (21)	74.7	25.3	27.7	9.4	1.49
Local Government (6)	82.5	17.5	34.0	7.2	0.87
Other Health Related (4)	78.0	22.0	29.7	8.4	0.11
Other (8)	86.8	13.2	40.7	6.2	0.18
TOTAL (42 Funds)	75.0	25.0	16.8	5.6	7.05

Source: Task Force on the Investment of Public Sector Pension Funds, Survey

Note: The numbers in brackets for each category of pension funds show the number of funds reporting the distribution of their equity investments between Canadian and foreign equities. The percentages are calculated using market values. Using book values, the percentage of total assets would be lower.

Table 6 provides a further indication of the diversification of the portfolios of the market-oriented Ontario public sector pension plans. The proportion of their equity investment held in foreign equities ranges as high as 33.5 per cent (OMERS), which is the maximum foreign equities it can hold while staying within the 10 per cent of total book value constraint.

3.3 Pension Funds and Corporate Control

Ontario pension funds are restricted to holding not more than 30 per cent of the voting shares of any one corporationl.[15] Consequently, a single pension fund cannot acquire outright control of any of the corporations in which it invests. However, control of 30 per cent of the voting shares of a corporation is sufficient to exert substantial influence over business decisions and possibly even maintain effective control if the corporation is widely-held.[16]

In fact, ownership of much less than 30 per cent of voting shares may give a pension plan, or any investor, substantial influence. The Ontario Securities Act (clause 1.(1) 17 iii.) includes in its definition of an insider:

> *any person or company who beneficially owns, directly or indirectly, voting securities... carrying more than 10 per cent of the voting rights...*

Under section 102 of that act, insiders are required to file insider trading reports of all trades involving the shares of a company in which they are an insider. This reporting is required because insiders are deemed to have an information advantage over other investors and possibly to be able to influence management decisions. Despite the restrictions on pension fund investment, it appears that the public sector pension funds could make investments that would enable them to influence the behaviour of the companies they invest in.

Although pension funds have the opportunity to exert some degree of control over the companies in which they invest, the industry participants interviewed for this study said that in fact Ontario public sector pension fund managers do not attempt to do so. One reason is that of the six Ontario public sector pension funds with more than $1 billion in assets, three hold only non-marketable provincial debt. The three funds investing in marketable securities had combined assets of about $12 billion as of 1985, of which less than $5 billion was invested in Canadian equities. Given that the total 1985 year end value of Canadian equities was about $200 billion and that diversification that approximates the market portfolio is necessary to limit portfolio risk, it is evident that the three funds combined would normally hold substantially less than 10 per cent of the shares of individual corporations.[17] No single Ontario public sector pension fund is large enough to hold an influential share of the voting stock of individual companies unless doing so were a deliberate strategy used to override normal diversification considerations.

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[15] Subsection 17(2) of Regulation 746 under the Pension Benefits Act reads in part:

[16] During the Ontario Securities Commission's (the OSC) Securities Industry Review in 1984, the issue of the share of voting stock that was sufficient to achieve effective control was debated. In recommending that a block of "insiders" must retain 50 per cent of voting shares although individual non-industry investors would be limited to 30 per cent, the OSC implied that 30 per cent ownership could be sufficient to exert effective control in the absence of a 50 per cent control block.

[17] The Caisse reports in its Financial Statements and Financial Statistics for 1985 that it is considered to be an insider of 19 companies within the meaning of applicable Canadian laws (10% rule). Most are Quebec-based enterprises in which the investment of the Caisse reflects its mandate to develop business in Quebec. As of December 1985, the Caisse held over $5 billion in equity securities, double the equity investment of OMERS which is the largest of the Ontario funds invested in marketable securities.

Another reason is that fund managers say that they do not have enough staff to serve on corporate boards or attempt to influence directly corporate decisions other than by voting their shares. That view implies that they do not consider the benefit of greater involvement to be worth the cost.

To the extent that fund managers influence corporate decisions, it is by "voting with their feet." Like all investors, if the investment managers of a pension fund lose confidence in management of a company, they can sell their shares in that company and decline to purchase new issues. Because pension funds, along with other institutional investors, are an increasingly important source of new financing, it can make it difficult for companies to raise new capital if institutional investors are not interested in purchasing their shares. Companies must be responsive to the attitudes of investors. However, given the large number of institutional investors, no single pension fund is likely to influence corporate decisions by "voting with its feet."

Events in the United States, however, presage a change in attitude among institutional investors. The May 18, 1987 cover story in *Business Week* deals with the issue of corporate control. The article cites substantial evidence of increasing efforts by institutional investors to exert more control over certain types of corporate decision in the United States, particularly those related to the compensation and security of senior management and to measures which are designed to block corporate takeovers. The article states that:

> *The increasingly powerful public institutional owners who banded together in the Council of Institutional Investors [CII] are spearheading a movement for change. With more than 50 [U.S.] pension fund members controlling $200 billion of investments, the CII is leading the proxy fight against anti-takeover tactics in about 40 shareholder meetings this spring.*

The article goes on to quote a fund manager who manages $6 billion, which is the of order of magnitude of the largest Ontario public sector pension funds:

> *The traditional institutional response is to vote with your feet. But you can't do that anymore. The size of our position is such that its hard to get out of some of our positions [without losing money]. The alternative of trying to alter management is sometimes necessary.*

If Ontario public sector pension funds were to cooperate to influence corporate decisions, or if they were to be centralized as is discussed in Chapter 6, it is clear that they could exert greater influence on corporate decisions. That increased influence could be used to pursue their financial goals - i.e. maximizing the return on investment of investors - or it could be used to pursue politically determined objectives set by the province as additional goals for the investment of public sector pension funds. Whether the latter approach would be an appropriate criteria for the investment decisions of public sector pension funds is the subject of Chapter 5.

Aside from the question of the goals that should be pursued by pension managers in exercising the control that goes with share ownership, there is the question of the implications of their fiduciary responsibilities to their clients. Since institutional investors as a group now own a majority of the shares of most widely-held corporations, it is difficult to see how they could fulfill their fiduciary responsibilities without actively ensuring that management is effectively pursuing goals that are consistent with the interests of their clients. In most cases, those interests are served by pursuing the goal of increasing dividends and share values to maximize the return on investment in the company's shares.[18] It would make a mockery of the principle of investor control of public corporations for institutional investors to adhere to a policy of acting as passive investors. Doing so would give de facto control to either management or a minority of shareholders, depending on whether they give management their proxy votes or decline to vote their shares.

Given the potential role of Ontario public sector pension plans in the equity market (see Chapter 2), particularly if they all invest in marketable securities in the future, their action - or inaction - in using their investment holdings to influence corporate decisions will inevitably have a significant impact. Since the managers of Ontario public pension funds are responsible to their clients - the Ontario government and plan beneficiaries - they require direction from their clients as to the extent to which they should exert control over the corporations whose stock the funds hold and the goals that should be pursued in exercising that control. Having established in this chapter that pension plans have the potential of exerting substantial control as minority shareholders, the question of whether goals other than profit maximization should be pursued is left to Chapter 5.

3.4 Trends Affecting Pension Investment Policies

Pension managers face a number of potential changes in tax law and pension regulations which may significantly affect the way in which pension fund assets are invested. Several of these are likely to cause private pension plans to increasingly move from defined benefit plans to defined contribution plans. To the extent that this results in an increase in self-administered money purchase plans, there may be a tendency for pension savings to be allocated less to equities and more to fixed-income investments.

3.4.1 Tax Changes

Current tax laws provide substantial incentives for the use of deferred compensation as part of a total compensation package. However, until recently, these tax incentives have been greater for pension plans structured as defined benefit plans than for defined contribution (money purchase) schemes.

Prior to 1988, provisions in the Income Tax Act discourage the use of defined contribution pension plans. Under current income tax legislation, total contributions by employer and employee to a registered defined contribution pension plan may not exceed 20% of earned income up to a maximum of $7,500. By contrast, there is no limit on employer contributions to a registered defined benefit plan. The only limit on defined benefit plans is that the pension benefit provided by the plan may not exceed 2% of "final years" earnings per year of service, up to a maximum (currently) of $60,000. On average, a little more than twice as much of an employee's income and benefits may be sheltered from tax using a defined benefit scheme as is the case if the pension plan is structured as a defined contribution scheme.

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[18] If goals other than maximizing the return to all shareholders are pursued, they must not be detrimental to the interests of minority shareholders. Management and the Board of Directors are required by law to ensure that the interests of minority shareholders are not neglected.

In October 1986, the federal government introduced a reform of the tax provisions affecting retirement savings. The reforms, which were to be phased in during the years 1988 to 1991, remove most of the current tax discrimination against defined contribution schemes from the viewpoint of employees. The June 1987 *White Paper on Tax Reform* proposes to delay the phase-in period to the years 1989 to 1995. Whatever the phase-in period, this tax change will reinforce the trend to increased use of defined contribution schemes in the private sector that is likely to occur from other causes.

3.4.2 Other regulatory changes

For employees, the use of defined benefit plans has in the past been perceived as a way in which the risks of providing pension benefits can be shifted to employers. While this perception can be illusory, in that there are other ways in which employers can shift the cost of bearing these risks back to employees, the perception was strengthened during the 1970's and early 1980's by the poor investment performance of most pension plans relative to inflation. Employers made up the funding deficiencies resulting from the increases in defined benefits resulting from inflation-induced salary increases.

Since 1982, pension fund assets have experienced abnormally high real rates of return. This has resulted in the occurrence of pension fund surpluses in defined benefit plans. In some cases, employers have transferred such surpluses out of the pension fund as well as eliminating current contributions.

The strong employee resistance to such transfers (as well as their resistance to having to maintain their employee contributions while employer contributions are reduced) has led to political pressures to change the rules governing defined benefit plans in the private sector. Similar pressures have occurred in the public sector. Such pressures are likely to be reflected in labour bargaining even if not in legislative changes, increasing the future cost of defined benefit plans to employers. A senior public sector executive remarked to us that changing employee perceptions regarding who owns pension assets may make the legal form of defined benefit plans virtually irrelevant. If the de facto structure of defined benefit plans comes to imply that the employer makes up investment losses but does not benefit from investment gains, then defined contribution plans will become more attractive to the employer.

Another potential regulatory change which may alter the structure of many private pension plans is the potential implementation of compulsory partial indexation of defined benefits. At the present time, the cost to the employer of defined benefit plans is reduced by the fact that inflation reduces the real value of future pension benefits and so reduces the corresponding real cost of a defined benefit plan. In some cases, private employee pension plans contain provisions which have the effect of introducing some indexation of defined pension benefits. However, such plans are in the minority among private plans.

The effect of introducing compulsory partial indexation of pension benefits will consequently increase the cost to the employer of defined benefit pension plans. This will provide further encouragement to private employers to switch to defined contribution schemes.

3.4.3 Investment Practices of Defined Contribution Plans

There is little statistical information available on the investment practices of self-administered defined contribution plans. Nevertheless, most industry participants whom we interviewed believed that self-administered plans were much more heavily invested in fixed-income securities than is the case for employer-managed defined benefit plans.

There are reasons to believe that a move to greater use of defined contribution pension plans will result in a gradual change toward more aggressive investment of the assets of defined contribution funds. The growth in the importance of such funds will create a market for mutual funds and other diversified unit funds that can be sold to self-administered money purchase plans, and will encourage innovation both in the design of investment packages for such funds and in their marketing. In addition, employers may offer hybrid plans that maintain the investment risk pooling features of defined benefit plans.

Nevertheless, while innovation will reduce the effects on pension investments of a change in the structure of private pension plans, it is likely that there will be some tendency for pension equity investments to diminish if there is a widespread move to defined contribution plans. In these circumstances, it may be of particular importance to consider allowing public pension plans to invest freely in diversified market portfolios. An increased public pension demand for equities would be helpful in offsetting any reduction in the demand for Canadian equities that may occur as a result of other regulatory and tax changes.

3.5 Conclusions

If the asset mix of public sector pension plans were to be changed from their current heavy emphasis on government marketable and non-marketable securities to a mix similar to that of private defined benefit pension plans, it would involve a major movement of pension assets from government bonds to stocks. In the following chapter, we analyze the likely impact of such a change.

The major reason for the different asset composition of private and public sector pension fund investments is the fact that a significant fraction of the public sector funds are restricted to investments in non-marketable government bonds. If all public sector pension plans were free to invest their funds in a diversified market portfolio, most of the differences in the asset composition of private and public sector pension funds would gradually disappear.

It can be expected that as public sector pension funds increase their total equity holdings, they will find that it is both possible and necessary to exert more control over management decisions that affect the investment return of shareholders. Institutional investors, including pension funds, represent the interests of a large cross-section of Canadian society who through the institutional funds are now the dominant shareholders in most widely-held corporations. Given that dominant role, it is increasingly difficult for managers of those funds to fulfill their fiduciary responsibilities without stepping beyond their traditional role as investment analysts. Not only can they vote their shares as most fund managers do at the present time, but they can take an active role in initiating shareholder action when the interest of management and investors conflict.

The precedent of other investors who hold large enough investment blocks to influence management decisions is that they seek to ensure that management maximizes their return on investment. Unless the major shareholders are willing to exercise their ownership rights to discipline management when corporate policies conflict with the interests of investors, they will be failing in their fiduciary responsibilities by failing to ensure that the self-interest of management does not override the interests of shareholders.

The potential changes in the tax and regulatory environment affecting private pension plans make this a particularly advantageous time to consider changing public sector pension plan investment practices. At a time when private pension saving may come to be invested in a more conservative fashion, the deleterious economic effects of the resultant possible decline in the demand by pensions for Canadian equities could be offset by moving public sector pension investments from government bonds to stocks. In the present context of a political commitment to changes in pension regulation, a change in public sector pension investment policies could have timely economic effects.

CHAPTER 4: THE POTENTIAL IMPACT OF INVESTING ALL PUBLIC PENSION FUNDS THROUGH THE CAPITAL MARKETS

This chapter deals with the effect of changing the investment policies of public sector pension funds in Ontario to cause such investments to be made through the capital markets. At present, three of the largest public employee pension funds, representing approximately one-half of the assets of Ontario public employee pension funds, are required to invest all of their assets in Government of Ontario bonds. This chapter deals with the impact on the capital markets and the economy of releasing these plans from that constraint.

There are four particular questions which are dealt with in this chapter:

1. How quickly would the asset distribution of Ontario public sector pension funds change and how large would the investment flows be?
2. What would the impact of such a change be on the capital markets? Would it have a significant effect on the cost of capital to Canadian firms?
3. What would be the impact of such changes on the economy of Ontario? Would it have a significant impact on employment and economic growth?
4. Would the impact of this change be appreciably more substantial if a similar change in public pension investment policies were implemented by other Canadian provinces?

In the first four sections of this chapter, the four questions listed above are discussed as they apply to the public sector employee pension funds that are not now invested through the market. These principally consist of the Public Service Superannuation Fund ("PSSF"), the Teachers' Superannuation Fund ("TSF"), and the Superannuation Adjustment Fund ("SAF").

The Superannuation Adjustment Fund (SAF) is a special fund established to provide partial funding for the indexation of the benefits provided by the PSSF, TSF, and Ryerson plans. Additional issues which arise in evaluating the investment of assets of this special fund are discussed in section 4.5.

The assets of the Canada Pension Plan ("CPP") also are invested primarily in provincial government bonds, with residual funds being invested in federal government bonds. The CPP is not a public sector employee pension fund, and quite different considerations arise in evaluating the investment policy followed by the CPP. The CPP is a program of transfer payments to the elderly which is largely financed on a pay-as-you-go basis by current taxpayers. The CPP fund consequently has a very different purpose than the funds of the public employee pension plans. The investment of CPP funds is discussed briefly as a separate policy issue in section 4.6. A study titled *Canada Pension Plan Fund Investment Options and Implications* commissioned by the Task Force examines the CPP more extensively.

Throughout this chapter, it is assumed that public pension fund assets invested through the market are managed purely to maximize the long-run risk adjusted return on investment, subject only to the same constraints that now apply to the investment of private pension fund assets. Whether these constraints are appropriate - or, indeed, whether other social and political objectives should be reflected in public sector pension fund investment policies - are issues that are discussed in the next chapter.

4.1 Magnitude of the Potential Change in Fund Flows

In assessing the impact on the capital markets of removing the present constraint requiring certain public sector pension funds to hold non-market investments, the first task is to ascertain the likely magnitude of the potential change in the flows of funds attributable to such a change. This section examines the value of the pension assets which likely to be switched from provincial bonds to other investments, together with the speed with which such a reallocation of funds might occur. The impact of this reallocation of fund portfolios on the capital markets is examined in the next section.

4.1.1 Alternative Ways of Implementing the Change

There are many ways in which Ontario public sector pension funds might be permitted to switch to a market-based investment strategy, ranging from total freedom to reallocate existing assets to a closely controlled transition.

In our view, the most appropriate implementation strategy is a middle course in which existing non-marketable bonds remain in the investment portfolios of the public employee pension funds until they mature, but new monies are invested in market investments. Under this approach, the current bond portfolio would be gradually converted to assets traded in the market as the bonds mature. This is the course that was followed earlier when the OMERS fund was converted to a diversified market portfolio.

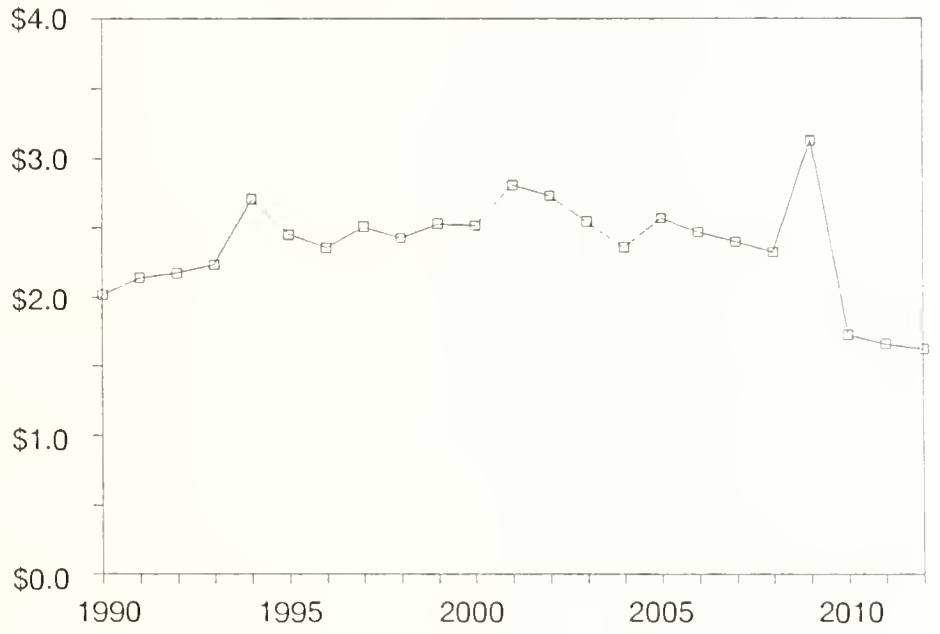
This middle course avoids the transitional difficulties that might occur in the market for Ontario bonds if all existing assets were immediately switched into marketable assets. The major public sector pension funds now invested in non-marketable Ontario bonds (the PSSF, TSF and SAF) held a total of $15.4 billion of these assets at the end of 1986, and a quick redeployment of this quantity of funds would be difficult for the markets to absorb smoothly. The middle course also avoids the administrative complexity that would be involved if only a portion of the maturing non-marketable debt were moved into a diversified market portfolio.

Limiting redeployment to new funds and maturing securities ensures a non-disturbing transition. In the case of OMERS, a fund currently with $9 billion in assets, the change occurred with no noticeable transitional impact when implemented through the late 1970s. In the remainder of this chapter, we assume that the potential magnitude of asset redeployment is limited in this way but that no other restrictions are imposed.

4.1.2 Potential Magnitude of Assets Which Might be Reallocated

Figure 5 provides a summary picture of the total flow of funds to the market that could potentially occur from a change in the investment policies of the three major public sector pension funds in Ontario that exclusively hold non-marketable provincial securities (the PSSF, TSF and SAF). The projections underlying Figure 5 are based on the assumption of an OMERS-style transition in which existing assets are not permitted to be redeployed until they mature. The projections assume that the transition begins to occur in 1988, which is the earliest date at which the transfer could occur. In fact, it is likely that there may be a delay of a couple of years before all new investment in non-marketable securities is terminated, as was the case with OMERS.

Figure 5: FLOW TO MARKET FROM ONTARIO PUBLIC SECTOR PENSION FUNDS
(billions of 1987 dollars)



Note: The figure is derived from the data in Table 7.

The relative importance of the different sources of funds available for market investment under these assumptions is shown in Figure 6 and by the more detailed breakdown provided by Table 7.

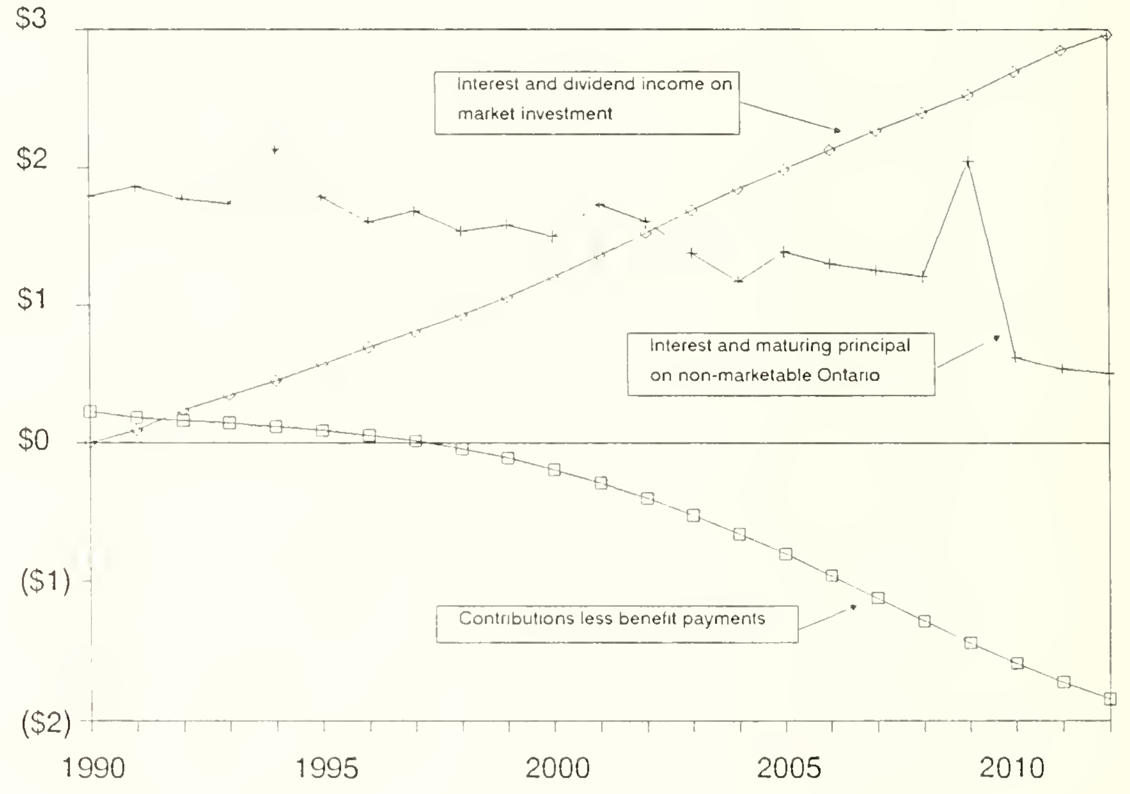
Initially, the most important source of funds available for investment in market assets is interest income on the existing assets of the three pension funds. As the projections in Table 7 indicate, the net cash flow from contributions to the funds is currently not much higher than current benefit payouts. Moreover, less than 10% of the non-marketable bonds currently held by the three funds mature in the next decade. Principal repayments on maturing non-marketable debt do not surpass projected interest income from these debt instruments before 2005.

After 1990, funds available for investment come increasingly from interest and dividend income accrued on investments in marketable securities made subsequent to 1987. As Figure 6 shows, such income will likely account for more than half of total funds available for investment by the three public employee funds as early as 1995.

The magnitude of the additional funds which would flow into the capital markets is significant. Nevertheless, it is less than 2.5 per cent of projected annual total Canadian private saving. That is no larger than the normal fluctuations in the demand for new financing (i.e., new issues of debt and equity) that occur from year to year over the business cycle, and is well within the magnitude of fluctuations which can be absorbed by the market without undue dislocating effects.

Figure 6: COMPONENTS OF THE PROJECTED FLOW

(billions of 1987 dollars)



Note: The figure is derived from the data in Table 7.

Table 7: **PROJECTION OF AVERAGE ANNUAL FLOW OF FUNDS AVAILABLE FOR INVESTMENT**

(millions of 1987 dollars)

	1988-90	1991-95	1996-00	2001-05	2006-10
Actuarial projections ofcontributions less benefits:					
TSF	168	175	28	(352)	(799)
PSSF	16	(7)	(36)	(94)	(175)
SAF	9	(84)	(199)	(366)	(603)
Total	192	85	(207)	(811)	(1578)
Interest income from pre-1988 investments in non-market debt:					
TSF	1149	1011	794	490	122
PSSF	461	406	331	244	118
SAF	169	138	67	15	5
Total	1179	1556	1191	749	245
Principal repayments at maturity on pre-1988 investments:					
TSF	0	134	253	412	495
PSSF	22	28	58	118	225
SAF	9	72	91	19	21
Total	30	234	402	549	741
Interest and dividends on post-1987 investments:					
TSF	71	386	840	1413	1963
PSSF	27	139	289	489	716
SAF	11	50	87	80	8
Total	109	576	1216	1982	2687
Total funds available for investment:					
TSF	1388	1707	1916	1963	1781
PSSF	525	567	642	758	883
SAF	197	177	45	(252)	(569)
Total	2110	2451	2603	2469	2095

(See Appendix C for sources and methodology.)

4.1.3 Likely Rate of Transition

There are a number of considerations which make it likely that the transition would be gradual. One of these is the necessity of building up a staff to manage a market portfolio. When OMERS changed to a market portfolio, the transition was made more gradual by the time required to assemble an investment management team; the same constraints would apply to the PSSF and TSF. It is likely that new funds would initially be heavily invested in marketable bonds while an in-house staff is being assembled for the management of equity investments. While it is possible that the fund trustees initially might hire external investment management companies to extend internal management resources, the necessity to develop internal management resources to choose and monitor external management would impose constraints on the speed of transition that would be almost as binding as relying exclusively on internal management.

Table 8: PROJECTED ALLOCATION OF NEW FUNDS INVESTED IN MARKETABLE SECURITIES

Total additional real demand (millions of 1987 dollars):

	1988-90	1991-95	1996-00	2001-05	2006-10
Bonds and mortgages	1237	518	1347	2032	2274
Equities	857	1658	546	147	(486)
Other assets	214	415	910	507	519
Total flow into market	2308	2591	2803	2686	2307

Total assets at end of period (millions of 1987 dollars):

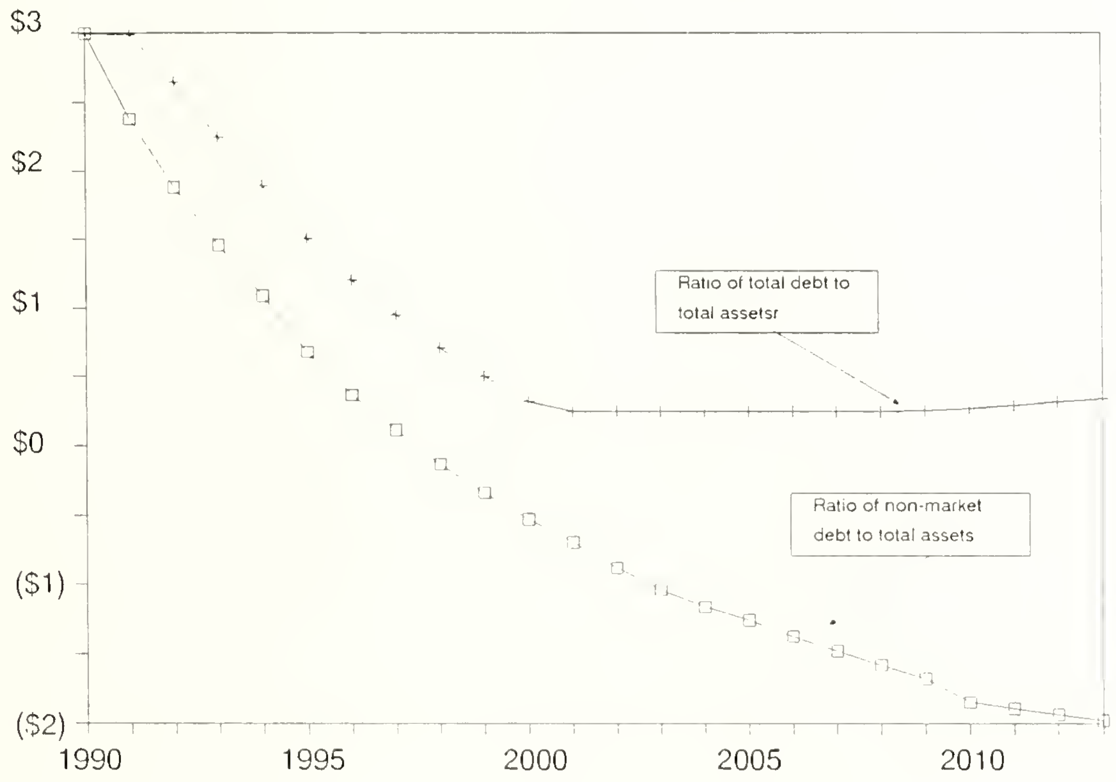
	1990	1995	2000	2005	2010
Non-marketable bonds	15,474	12,008	8,194	4,309	224
Other bonds, mortgages	3,524	5,409	10,998	18,774	26,386
Equities	2,687	12,162	17,071	20,518	23,653
Other assets	633	2,476	6,273	7,649	8,871
Total assets	22,372	32,147	42,650	51,294	56,821

Notes: (1) The fraction of investable funds allocated to new bonds and mortgages is assumed to be 100% in 1988, 60% in 1989, and 20% thereafter so long as the total projected market value of equity investments is less than 45% of the total market value of fund assets. Once equity investments have been increased to this target ratio, total investable funds are assumed to be allocated so as to maintain this target ratio.

(2) Real capital gains on equities are assumed to be 3% per year, and the average total real return on equity is assumed to be 7% over the long term. Real capital gains on debt instruments are assumed to be zero.

Once an internal management capability is achieved, it is likely that the pace of asset reallocation would accelerate. For some time after the change in investment policy, it is likely that a considerable fraction of new funds would be invested in assets other than bonds in order to bring asset portfolios closer to what would be considered desirable in the longer run. The speed with which a long run target is approached is of course dependent on the way in which each plan's trustees decide to implement the change in investment policy. Nevertheless, we believe it likely that the advantages of moving to a more diversified portfolio will result in a relatively high fraction of new funds and maturing assets being invested in marketable assets other than bonds.

Figure 7: FRACTION OF PUBLIC SECTOR ASSETS INVESTED IN BONDS
(billions of 1987 dollars)



Note: The figure is derived from the data in Table 7.

Table 8 summarizes one plausible scenario. In this scenario, it is assumed that the PSSF, TSF, and SAF are all permitted to invest new funds and maturing assets in marketable securities beginning in 1988. It is assumed that the funds do not start investing in equities before 1989, but that by 1990 only 20% of new funds available for investment are allocated to bonds and mortgages. The effect of this rate of investment in equities and other assets is to bring the fraction of fund assets invested in bonds and mortgages down to the level currently held by other public employee funds by the end of the subsequent decade. The change in the fraction of fund assets invested in debt instruments is shown in Figure 7.

While the scenario summarized in Table 8 and Figure 7 may represent a more rapid reallocation of fund portfolios than some analysts might project, it is not an implausible scenario. For the purpose of the analysis in subsequent sections of this chapter, it provides a reasonable indication of the extent of the readjustment which the capital markets may have to absorb.

4.2 Impact on the Capital Markets

Given the gradual nature of the likely transition to market-based portfolios, the effect of changing public sector pension fund investment policies is unlikely to bulk large in the capital markets. In relative terms, the size of the potential flows are a small percentage of total transactions in the Canadian capital markets. Beyond this, the increasingly close connections between Canadian and international capital markets ensure sufficient market breadth to absorb substantial reallocations of asset demands by Ontario investors.

4.2.1 Likely Reallocation of Public Pension Asset Portfolios

While the desired asset portfolios of individual public sector pension funds will vary, it is unlikely that they will differ markedly from the current asset portfolios of public sector pension funds that are currently invested in market assets. In turn, as the data presented in Chapter 4 indicates, their composition does not differ greatly from the average asset composition of private pension funds.

Moving the asset portfolios of the PSSF and TSF closer to the norm for other public and private pension funds will increase the demand for assets other than Ontario bonds - notably for Canadian and foreign equities. By the mid-1990s, it is possible that close to one quarter of the asset portfolios of these two funds would be invested in equities. The projection summarized in Table 4.2 reflects such a scenario.

In addition, following the experience of other funds, it is likely that the fixed-income component of these funds' portfolios would become more diversified. Under the assumed transition, in which only new cash flows and maturing non-marketable debt are subject to reallocation, it will be some years before the funds' demands for bonds will not be largely satisfied by their existing portfolio of Ontario bonds. Nevertheless, there will be a tendency for the funds to use part of their investable funds even in the early years of the transition to supplement their holdings of Ontario bonds with purchases of high-grade corporate bonds and mortgages along with government bonds issued by other jurisdictions. A bond portfolio restricted to bonds of a single issuer is obviously an anomaly, and would not long survive the removal of the restriction currently constraining investments by the two large public employee pension funds in Ontario.

4.2.2 Effect of the Increased Demand for Canadian Equities

Because of the total size of the market of the market for Canadian equities, the increased demand for equities by Ontario public employee pension funds would not have a sizeable effect. Relative to the current aggregate size of the equity market (about $350 billion), reallocating one-quarter of the total assets of the PSSF, TSF and SAF funds would increase the aggregate demand for Canadian equities by only about 2%. The effect of this increase in aggregate demand on equity prices is (by itself) small relative to the magnitude of the month-to-month changes in demand caused by changes in investor expectations. The effect would of course be larger if followed by other jurisdictions.

While the total effect may be small in relative terms, the effect of removing the restrictions on public employee pension fund investments is clear in its direction. Equity prices would be increased somewhat, and this would result in a corresponding reduction in the average cost of equity capital to Canadian firms. In addition, the breadth of the market for Canadian equities would be increased, reducing somewhat the volatility of equity prices.

From a purely provincial perspective, the increased demand for Canadian equities would in time be reflected in an increased supply of equity funds both to established Ontario firms and to new ventures. At the same time, the increased demand for fixed-income investments from a more diversified set of issuers would result in some increase in the demand for bonds issued by Canadian firms, further increasing the supply of funds available to finance Canadian companies.

4.2.3 Displacement Effects

The effects of the changes in public employee pension fund portfolios would of course reflect the responses of other participants in the capital markets as well. The increase in demand for equities by Ontario public sector pension funds would be offset in part by some reduction in the demand for Canadian equities by other suppliers of funds to the markets. The offsetting reductions would come in the form of responses by other capital market participants to the increase in equity prices that would be caused by the public pension funds' increase in demand.

The most important effects of the potential change in public pension fund portfolios will be on Canadian equity prices, on the cost of equity capital to Canadian firms, and on the breadth of the market for Canadian equity markets. While the overall attractiveness of investing in Canadian equities will be enhanced by an increase in market breadth, the market responses to the increase in equity prices will mean that some component of the increased demand for equities by public pension funds will simply displace investments in equities by other market participants. Such displacement is nothing more than the normal process through which changes in market prices cause behavioral responses that bring markets back into equilibrium.

The way in which the changes in public employee pension fund portfolios will affect business in Ontario is through making equity funds available at somewhat lower cost and from a broadened spectrum of suppliers. Though some displacement will occur in the capital markets, the total supply of equity funds to Canadian business will increase as (and to the extent that) total Canadian business investments are increased in response to the reduction in the average cost of funds.

4.2.4 Effect on the Market for Ontario Bonds

An important consequence of investing public employee pension fund assets through the market is that Ontario government borrowings would also go through the market. At present, the net borrowing requirements of the provincial government and its crown corporations are exclusively financed by the "captive" public employee pension funds and by the province's share of employer and employee contributions into the Canada Pension Plan. One effect of the proposed change in public employee pension fund investment policies will be that Ontario will have to meet some of its borrowing requirements by raising funds from the market.

Doing so will have two favorable consequences. First, the increased supply of Ontario bonds in the market will increase the breadth and depth of the market for Ontario bonds and so increase their liquidity. This will make such bonds more attractive investments. Second, to the extent that Ontario government borrowing requirements are met through issues marketed to foreign borrowers, the breadth and depth of foreign markets for Ontario bonds will be increased, increasing the degree to which Canadian and foreign bond markets are integrated. The consequent dissemination of information about the Ontario economy to foreign investors will make it easier for Ontario corporations as well as Ontario governments to market new bond issues to foreign investors.

One of the major advantages of the increased tendency toward globally-integrated capital markets is that the depth of local capital markets is increased. By increasing the breadth of the foreign market for Ontario bonds, both public and private, an increased Ontario government reliance on borrowing from abroad will accelerate this increase in market depth.

An increased reliance by the Ontario government on foreign borrowing sources is made easier by recent improvements in the market for foreign currency swaps --in particular, the development of markets for swap instruments for debt of fairly long maturities. These developments make it possible to hedge most foreign borrowings against exchange risk and so make the use of foreign borrowing sources significantly less risky for the Ontario government than was the case in the 1970's.

4.2.5 Effect on International Capital Flows

It is likely that the potential increase in the flow of funds into equities will be balanced partly through an increased inflow of foreign funds into debt securities. Beyond this, it is possible that aggregate foreign capital inflows will increase in order to finance an increased demand for funds by Canadian firms in response to any reduction in the cost of equity capital.

This possible impact of foreign capital inflows may be enhanced if increased foreign placement of Ontario government debt securities results in a broader and deeper market for Ontario bonds, since this could result in a further reduction in the cost of capital to Canadian business through spillover effects on the market for Ontario corporate bonds. This could result in some upward pressure on the Canadian dollar in the middle term, permitting a narrowing of interest rate differentials between Canada and the U.S. relative to what they otherwise might be.

The magnitude of these possible changes in capital inflows is unlikely to be very significant. Nevertheless, to the extent that they occur, they would have favorable effects on the availability and cost of financing for Canadian firms.

4.3 Impact on the Economy

The impact of shifting public sector pension funds currently invested in non-marketable securities into diversified market portfolios on the economy of Ontario will arise as a consequence of any reduction in the cost of capital that results from the policy change. It is argued earlier in this chapter that the cost of equity capital in Canada will tend to be reduced by the shift of assets into marketable securities, but that other investment would be displaced so that the net effect would be small. Similarly, although the immediate effect would be to decrease the supply of debt financing for the Ontario government, the reduced investment by public sector pension funds could be easily replaced by domestic and foreign borrowing with marketable debt instruments. The ultimate effect may even be reduced debt costs.

Furthermore, the supply and demand for equity capital in Ontario is virtually fully integrated into the Canadian capital market, hence, any effects will be seen only on the cost of capital at the national level. Hence, any benefits that result from the policy shift will be felt by the Canadian, rather than the Ontario economy.

To the extent that pension funds invest in smaller corporations that have limited access to the international capital markets, there may be some stimulative impact on the Canadian economy. However, given the view of most of the industry participants interviewed that there is no shortage of capital for promising projects even among small businesses, any new influx of available capital will tend to primarily drive out other investors rather than increase the supply of capital. Nevertheless, it can at least be argued that the addition of new players in the market with substantial funds to invest can only increase the opportunities for new and growing enterprises to find the capital required for growth. The effect cannot be detrimental.

Larger corporations, particularly those with access to the international capital markets due to their size, will be the primary class of equity investment attracting the pension funds. Those companies, however, are the least likely to notice any effect on their cost of capital since the depth of their markets is large compared to the incremental investment afforded by the entry of the Ontario pension funds into the capital markets. Assuming the funds invest in a manner similar to that of pension funds already actively invested in diverse market portfolios, the stimulative effect will be small.

One conclusion is clear, however, the benefit in terms of economic stimulation that does result from a move to the market will be maximized by investing in those businesses which have the highest prospect of succeeding and promise a high return on investment. To ensure that those types of businesses are the ones that benefit from the increased supply of capital requires that the investment criteria guiding the pension fund managers be maximization of the risk-adjusted return earned by the fund. Economic development will not be as effectively realized by other objectives such as risk minimization or social objectives that override the return objective.

4.4 Effect of Similar Changes in Other Provinces

The Task Force surveyed other provinces to determine the total value of non-marketable investments. The only provinces that reported provincial public sector pension plans with non-marketable provincial securities (including funds with assets accounted for in the provincial consolidated revenue funds) were British Columbia and Quebec.

British Columbia reported having $6.8 billion of assets in public sector pension plans as of December 31, 1985. Of that amount, 38 per cent was invested in marketable government bonds. About $1 billion was held as consolidated revenue fund assets.

Quebec reported that it has $12 billion in consolidated revenue fund assets. The Caisse manages only the employee contributions to the Government and Public Employees Retirement Plan. The employer contributions are held as non-marketable assets.

Based on this information, it is apparent that the total value of non-marketable assets in all provinces is almost double the value of Ontario's non-marketable assets alone. If it is assumed that the non-marketable pension assets in B.C. and Quebec have similar retirement schedules to Ontario's non-marketable pension assets, and that the contribution less benefit projections follow a similar pattern,[19] then the projection of funds available for investment shown in Table 7 would be doubled if all Canadian provinces were to convert their public sector pension funds with non-marketable assets into funds investing in diversified market portfolios. The total funds available for investment would then average over $4 billion annually in the years 1988 to 1990, and about $5 billion annually from 1991 to 2005, assuming they converted to market investing immediately.

The conclusions regarding the impact of a policy change in Ontario alone would not be affected if all provinces adopted the same policy. Even with a $5 billion flow, the flow from the non-marketable funds could easily be absorbed by the capital markets. Moreover, if (contrary to our projections) it proved difficult for the capital markets to absorb the resultant increase in demand for equities, there is an easy way of dealing with this: namely, to remove the 10 per cent limit on the investment in foreign equities.[20]

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[19] Data were not available to project actual cash flows for the non-marketable pension assets of other provinces in a manner comparable to the Ontario projections presented in Appendix C. Although differences between the Ontario, B.C. and Quebec cash flow profiles may exist due to different growth rates for the membership of the relevant plans, the assumptions made are adequate for determining whether the additional funds flow will alter the conclusions of the previous sections regarding the impacts of moving the non-marketable assets of public sector pension funds into diversified market portfolios.

[20] See the discussion of the 10 per cent limit in section 5.4.

4.5 The Indexation Component of Public Sector Pension Liabilities

The Public Service Superannuation Fund and the Teachers' Superannuation Fund are but one component of the assets funding the public service and teachers' pension plans. The other component is the Superannuation Adjustment Fund (SAF), which is an ad hoc supplemental fund designed to provide partial funding of the indexation liabilities of the public service and teachers' pension plans.

There are two levels at which the issues raised by these indexation liabilities may be addressed. First, there is the issue of whether it would be better for the assets of the SAF to be invested in a diversified market portfolio than in non-marketable provincial bonds. Second, there is the more fundamental issue of whether the provincial government's contractual liabilities under the indexation provisions of the public service and teachers' pension plans are better funded using a different approach to investment.

4.5.1 The Case for Market Diversification

From the perspective of the risk-adjusted return earned by the fund, the case against restricting the investment of the SAF assets to non-marketable investments is basically the same as for the TSF and the PSSF as discussed in the preceding sections of this chapter. A higher risk-adjusted return can be earned in the long-run on a diversified and flexible portfolio than can be earned on a portfolio invested exclusively in long-term government debt.

Furthermore, since the role of the SAF is to provide inflation indexation, it is particularly desirable that the funds be invested in a manner that provides a hedge against inflation. The current investment strategy of holding long-term bonds is the worst possible inflation hedge. The SAF receives a fixed return for 25 years regardless of the inflation rate.

Whether the relevant risk associated with an increasing inflation rate is considered to be the risk that taxpayers will have to cover a large deficit, or the risk that plan members will find their indexation benefits reduced because the deficit is too large, it would be minimized by investing in money-market (short-term) investments. The average real return on money-market instruments is close to zero in the long-term, but the risk reduction it provides matches the needs of the SAF better than any alternative. Assuming the investment goal is not simply to minimize inflation risk but to seek a balanced trade-off between the expected return and inflation risk, a portfolio which consists of a mix of short-term assets and equities would be clearly superior to the current investment in long-term government debt.

The case for investing SAF assets in market instruments is even stronger than it is for the assets of other public sector pension funds. From the perspective of the impact on the capital markets of transferring SAF assets to marketable securities, the issue is trivial. The assets of the SAF account for only 10 per cent of projected funds available for investment in the 1988 to 1990 period if all non-marketable investment held by Ontario public sector pension funds were moved into market investments. That is shown in Table 7. After 1990, the relative significance of the SAF will decline, unless contribution rates are increased. But even so, given the earlier conclusion that the total cash flow from the TSF, the PSSF and the SAF together would not disrupt the market, clearly the relatively small flow from the SAF is of no concern.

4.5.2 Alternative Investments for Inflation Protection

Over the long term, investing pension fund assets in a mix of equities and short-term notes is likely to provide the best compromise between inflation protection and income. An exclusive orientation to safety would result in investing exclusively in money market instruments; this would be very costly in foregone real return. On the other hand, the real rate of return on a 100 percent equity portfolio would be much more volatile as well as being higher on average.

Any such portfolio has the merit of being largely protected against inflation over the long term. Though real returns may be low during periods of substantial uncertainty about future inflation, interest rates and expected returns on equities will rise in nominal terms to compensate for expected future inflation.

An alternative form of market-based portfolio is available to governments: namely, to issue indexed bonds that can provide a still better investment instrument for pension funds in search of risk-minimizing investments. For Ontario, marketable indexed bonds might be issued by the provincial government directly or might be issued by provincial agencies such as Ontario Hydro or to finance social housing. In both cases, the near-indexation of revenues used to meet debt service requirements makes it possible for such agencies to issue indexed debt safely. The advantage of doing so for the agencies is that the real expected cost of funds borrowed would likely be less for indexed that for conventional debt. This has been the case in the Britain, where a substantial fraction of government borrowing has been contracted in indexed debt.

The advantage of issuing indexed debt, which the public sector pension funds could hold, is that indexation fund (the SAF) would not be required because the indexed bonds would offer the necessary inflation protection to future beneficiaries of the pension funds holding the indexed bonds. The risks associated with inflation would then be located in the right place. Presently, the risks of providing indexed pension benefits are borne in large measure by the government; in effect, the indexed pension liabilities of the government represent a hidden issuance of indexed debt. There would be many advantages in making such issuance explicit.

The risks associated with SAF investments are shared by the current contributors, provincial taxpayers and the current beneficiaries. Under the rules of the plan, benefits are guaranteed by the province only for current recipients; they are subject only to the risk that the cost of the guarantee becomes unacceptably large to provincial taxpayers. The principal risk is borne by current and future contributors. If a deficit occurs, current SAF contributors may face reduced indexation benefits; future contributors will face a requirement for increased contributions.

Under these circumstances, a large fraction of the risks associated with the current SAF investment strategy are borne by plan members, who would consequently benefit from investing SAF assets in a portfolio of market assets or indexed government bonds, either of which would provide a substantially better long-term hedge against inflation.

4.6 Canada Pension Plan

The Canada Pension Plan differs from public employee pension plans in important respects. First, it is not a funded plan, and there is consequently no certainty that the substantial increases in payroll taxes which will be required to pay for future planned CPP benefit levels will be accepted by future taxpayers. Second, the CPP plan is universal, so that there is no specialized group of employees (or other group of working-age persons) who perceive themselves as having an "ownership" interest in the CPP fund. Third, the federal-provincial arrangements regarding the CPP differentiate the provincial interest from what it is in the case of provincial employee pension plans. The province may borrow CPP funds at a prescribed rate (the average yield on recent long-term federal government bond issues), and is not responsible for the unfunded CPP liabilities.

Given these differences, the issues involved in choosing whether to invest CPP funds in marketable assets are very different from the issues that arise in the case of public employee pension funds. In essence, the issue for the Ontario government in dealing with the CPP funds is whether it is cheaper to borrow from the CPP at the prescribed long-term Canada bond rate than to borrow from the market at other maturities. For the provincial government, the CPP fund is simply an alternative source of funds, not a responsibility.

If CPP funds were invested in market investments by the province, this could only be accomplished by the province acting as a financial intermediary: borrowing from the CPP fund and reinvesting the funds in market assets. Whether it would be socially beneficial for the province to do this is questionable. Unless such funds are used for economic enhancement purposes, the issue discussed in the next chapter, there might appear to be little point in Ontario exercising its option to borrow CPP funds merely to reinvest them.

Nevertheless, the arguments in favour of investing CPP funds in marketable investments are the same as those developed earlier in this chapter for other public sector pension funds. From an economic viewpoint, the principal argument is that the functioning of the capital markets would be improved by increasing the flow of funds through the market. It would be better for the Government of Ontario to raise all of its borrowing requirements from the market and invest its share of the CPP funds in market assets than to borrow directly from the CPP fund in the form of non-market debt. It would be still better for all of the CPP fund to be invested in a diversified market portfolio.

The current policy of providing CPP funds to the provinces through the purchase of non-marketable provincial debt represents a compromise between what is desirable from the viewpoint of minimizing the risk-adjusted cost of future CPP benefits and the regional viewpoint of providing low-cost funds to the less developed provinces. Since it is most unlikely that this compromise will be changed, a second-best policy for Ontario may well be to borrow its share of the CPP funds for reinvestment in the market.

4.7 Conclusions

The analysis summarized in this chapter makes it clear that the capital markets will have no difficulty in absorbing the changed fund flows that would result from investing Ontario public sector pension funds through the market. Although the flows are material, they are small compared to the total projected volume of Canadian saving. In our interviews with participants in the capital markets, no one predicted difficulties in the markets provided the reallocation of funds was limited to investment income and maturing debt issues.

The impact of the changes that would be associated with investing Ontario public sector pension funds in diversified market portfolios would virtually all be beneficial. The markets for Canadian equities would be broadened, as would the market for Ontario provincial government bonds. Additional capital would be attracted in Canada from abroad, increasing the total amount of funds available for investment in Canada. It is likely that the cost of equity funds for Canadian business would have to become lower in order to clear the market, and this would be beneficial for Canadian firms.

From an economic viewpoint, a move to make Ontario public sector pension funds invest in marketable securities instead of non-marketable securities could only be beneficial. Although the effect would be small due to the displacement of other investment, it would tend to increase the supply of capital and lower the cost of equity funds to Canadian businesses.

CHAPTER 5: POLICY ISSUES IN THE ALLOCATION OF PENSION FUND INVESTMENTS

The previous chapter concluded that the capital market effects of investing public employee pension funds in diversified market portfolios would, on balance, be advantageous. In analyzing these effects, it was assumed in the that chapter that public employee pension plans would be subject to the same rules that apply to private pension plans.

In this chapter, we turn to the question of whether public pension plans should be subjected to additional constraints (whether in the form of rules or guidelines) in order to achieve an enhancement of economic growth within Ontario. We also examine whether the existing rules which apply to private pension plans are appropriate in the case of public plans.

5.1 Economic Enhancement Objectives

There are many potential rationales for government intervention to regulate markets, including social and ethical goals as well as economic objectives. We will deal only with economic objectives in this chapter.

5.1.1 Promoting Overall Economic Growth

The most compelling economic objective for the Ontario government is to increase the overall economic well-being of Ontario residents. In itself, the statement of such an objective is little more than political rhetoric. The important questions are under what circumstances and in what ways should the provincial government intervene to prómote economic growth.

In a province such as Ontario with a strong market economy, there is much to be said for a policy of minimizing government intervention. For an economic rationale for intervention to be convincing, it is necessary to be able to show that private markets fail in some important respect --whether because of social costs not being fully taken into account or because of other factors that make it difficult for a market to be formed. In some cases, an economic rationale for government intervention may be to offset undesirable economic effects of government regulations that have a social or ethical purpose.

In the case of pension investments, there may be a conflict between achieving the best return consistent with efficient portfolio diversification and maximizing economic growth within the province. One reason for such conflicts is the potential for fiscal externalities arising from provincial tax revenues on incomes and output. To take one example, taxpayers within Canada gain from the potential reduction in tax rates attributable to an expansion of Canadian income and employment. Investors looking only at the after-tax rates of return on different assets do not take into account the Canadian tax revenue collected from income produced by assets located in Canada.

5.1.2 Promoting Regional Growth

The objective of increasing the overall rate of economic growth in Ontario is, for many individuals, an incomplete goal. Maintaining economic growth in all of the major regions of Ontario is also desired. Whether to provide a tax base to support regional infrastructure or simply to maintain house values, the promotion of regional economic growth is inescapably a political goal. There is almost certainly a conflict between the goal of promoting growth for the province as a whole and the goal of maintaining reasonably balanced growth in all regions, since redistributing growth and its benefits cannot be done without incurring some cost. Both goals --and the tradeoff between them-- are elements of provincial political objectives.

5.1.3 Sectoral Economic Objectives

A third element of the provincial economic strategy is the objective of promoting certain sectors of the economy. Like the goal of regional growth, this economic objective may arise in response to redistributive concerns. In part, promoting particular sectors of the economy may serve to preserve human capital and individuals' wealth by delaying transitions. If a cyclical industry is suffering a temporary slowdown, it may be in the long run interest of the economy to step in to help maintain the skilled workforce through the slow period. Doing so may avoid the double adjustment costs of having workers move to new jobs, then have the industry retrain a new work force in a year or two, once the industry's recovery is underway. Provincial support of the industry can redistribute some of the costs to the workers and the industry of adjusting to cyclical conditions. Even if changing conditions are permanent, the government may wish to redistribute some of the costs of change to the general population who may be benefiting from the changes.

Other provincial goals may reflect assumptions regarding the social productivity of "growth-leading" infrastructure investments. Economic assistance is provided to help build human capital through education and job training. It also may be used in developing a critical mass in the demand for high-technology skills or in developing new industries, particularly those that are considered strategically important to Ontario's future economic growth.

5.2 Benefits and Costs of Restricting Pension Investment Policies

While it is clear that there are many reasons for government intervention in market activities to promote the redistributive and growth objectives which constitute economic enhancement goals, the existence of such goals says nothing in itself about whether it is efficient for the government to intervene in the investment decisions of pension funds, whether private or public. There are many instruments for government intervention, and the case for pension fund regulation must be made on the basis of the relative merits of such regulation compared to the costs and benefits of other means of intervention.[21]

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[21] Other instruments include tax incentives and government guarantees. For example, OMERS has invested over $1 billion in government guaranteed mortgages for socially-assisted housing. That investment is motivate by financial considerations, not constraints on pension investment policies.

5.2.1 Potential Rationale for Regulating Pension Investments

One potential rationale for regulating pension investments is the non-availability of tax instruments that might directly affect pension investment behaviour. The tax-exempt status of pension plans makes it difficult to make use of the tax incentives which are a primary instrument for motivating desired investment in particular sectors or regions. A capital gains exemption, for example, offers no incentive for the investment of pension assets.

A further rationale may be that the province expects fiscal externalities from investment in Ontario. The province may regulate public sector pension plan investment, requiring them to invest some minimum portion of their assets in local business. The rationale for such a policy may be that even if they earn a lower return on investment as a result, the additional tax revenue generated by increased investment within the province would more than offset the increased funding requirements for the pension plans to be fully funded.

5.2.2 Potential Costs

However meritorious the rationales for regulating pension investment may be, the costs of restricting the ability of fund managers to be guided by the objective of maximizing the risk-adjusted return on investment for the assets they manage must be considered. Any policy which compromises the investment return will increase the risk-adjusted cost of providing pension benefits. Pursuing political goals by regulating the way funds are invested hides the true cost of the policy, a circumstance which invites misuse in the sense that the benefits may outweigh the costs. Because lost investment opportunities are difficult to measure, it may be almost impossible to evaluate the effectiveness of such policies. A more direct approach to providing investment incentives would be far more conducive to the development of effective policy instruments.

The most serious concern from the, perspective of plan members is that even if the investment restrictions do provide a return to the province as a whole, it may be at the expense of pension plan members. Even if the plan has defined benefits guaranteed by the province, there may be a cost to plan members. For example, a reduced return on the assets of a public sector pension fund may make it more difficult to negotiate improved benefits, depending on the nature of the pension agreement between the employer and employee.[22] Also, since all circumstances cannot be perfectly foreseen, there is always some risk that all pension benefits will not be paid if a plan is underfunded, despite the guarantees. There is always some political circumstance which could lead a future government to change its policy. The lower the return on a pension plan's assets, the greater the risks of losses that will affect benefits.

5.2.3 Additional Regulation of Public Pension Investments

Whether or not it is beneficial for the government to intervene to constrain private pension investments, there is a separate issue of whether public pension funds should be subject to special regulation. The principal rationale for singling out public pension funds for special treatment is that the taxpayer is already involved in a special way through guaranteeing pension benefits to TSF and PSSF plan members, and so arguably has a greater "right" to use the funds being guaranteed in ways that may increase the aggregate tax base that supports such guarantees. The principal argument against special rules for public pension funds is that such rules decrease the comparability of public pension investment performance with that of private funds, and so makes it easier for public funds to be poorly managed. As well, the Government has bound itself under the Pension Benefits Act, 1987 to be governed by the same rules as the private sector.

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[22] Don Ezra's paper "The Nature of the Pension Agreement," which was prepared for the Task Force, examines the various kinds of pension deals in detail.

The argument against special rules for public employee pension plans is a strong one. There are many advantages in attempting to provide clearly-structured managerial objectives to the individuals and agencies responsible for the management of public employee pension investments. From this viewpoint, anything that makes such managerial objectives different from those of comparable private pension plans reduces the comparability of public and private plans and permits poor investment performance to be excused as arising from the need to satisfy objectives other than fund performance. Providing the same rules for public and private funds removes this potential excuse.

5.2.4 Special Policies for Canada Pension Plan Investments

As has already been noted, the CPP is very different from public employee pension funds. The CPP is not designed to be a fully-funded pension plan, and it has no membership restrictions. The CPP is essentially a social program which transfers benefits to retired workers that are paid for by current taxpayers. Its fund serves to smooth out the financial burden of paying benefits to current beneficiaries and to absorb the effects of revenue fluctuations due to macroeconomic shocks, but is insufficient to ensure that currently-promised CPP benefits will be paid when current contributors retire.

Under these circumstances, there is a stronger case for using the CPP funds for government-defined purposes than there is for distorting public employee pension funds investments. The burden of paying future CPP benefits is borne by future taxpayers, and so the use of CPP funds to attempt to increase the future tax base involves little redistribution of risk. The federal-provincial arrangements under which the province can borrow CPP funds mean that there is really little difference between borrowing funds from the market to fund a special Ontario economic development investment fund and using the CPP funds for this purpose. Indeed, if the CPP funds were to be used to promote specific government defined goals, the defined cost of the CPP funds to the province would provide a clear measure of the direct cost to the province of engaging in an active investment program.

Putting the issue in this way perhaps provides the best approach for illuminating what is involved in attempting to use public sector pension funds for social or economic purposes that are not reflected in rules applicable to all pension funds, whether public or private. In essence, the issue is whether it is beneficial for a government to set up a new financial institution to pursue different objectives than those pursued by existing private sector institutions. There are circumstances, such as those which motivated the establishment of the Caisse de Depot in Quebec in the mid-1960s, where doing so is advantageous. Existing financial institutions may not be serving all parts of the capital markets equally well and, if so, there may be arguments for establishing new institutions in such cases. Such arguments clearly applied in the case of Quebec in the 1960's, where the francophone entrepreneurs were not as well served as anglophones. It is difficult to see similar arguments of unserved market opportunity applying in Ontario at the current time.

5.3 Current Constraints on Pension Fund Investment

We have argued in preceding sections that the same regulation should apply to public pension funds as applies to private pension funds. We now turn to the evaluation of government-imposed regulation of pension funds, whether public or private. In this section, we deal with current regulation, notably the requirement holding pension fund investments in foreign assets to a maximum of 10% of the book value of fund assets.

5.3.1 The 10 Percent Rule

Currently, pension funds are eligible for tax-preferred status only so long as they maintain a minimum of 90% of their funds in Canadian assets. The most important effect of this rule is to reduce the extent to which registered pension funds can diversify their holdings by investing in foreign equities. To the extent that this constraint is binding for individual pension funds, it increases the total demand for Canadian equities at the expense of the expected risk-adjusted return on pension assets. It also reduces opportunities for diversification, increasing the risk exposure of pension investments.

In our interviews with capital market participants, we discussed the extent to which the 10% rule has had an identifiable effect on Canadian capital markets. While the rule was widely seen as an undesirable intrusion into investment management that reduced pension fund managers' ability to diversify risks, it was generally believed that the response of investment managers to the rule had not materially affected the cost of capital to Canadian firms.

The relatively loose nature of the constraints imposed by the 10% rule contributes to its relatively small effect on the total demand for Canadian equities. Allowing for normal differences between market and book values and for the average importance of total equities in pension fund investment portfolios, the 10% rule translates into a constraint that not more than one-third of equity holdings may be invested in foreign assets. This constraint appears to have little beneficial affect on the overall level of domestic investment, while serving as a detrimental restriction on the flexibility of investment managers in some instances.

It may therefore be concluded that the 10% rule could be eliminated without much effect on the capital markets. Moreover, the effects of eliminating the rule would be largely offset by the effects of public sector pension plans investing in market. That would be the case because of the impact of the latter on demand for equity investments.

Elimination of the 10 percent rule would permit more diversification of pension fund investments and so provide a higher risk-adjusted return on pension fund assets. Who benefits from this would of course vary from plan to plan, depending on the nature of the pension deal. However, in most cases in the private sector, the employer's cost of providing a defined set of pension benefits would be reduced, resulting in lower labour costs and some increase in the demand for labour.

Under present circumstances, the 10 percent rule imposes costs on pension fund contributors and beneficiaries which are not warranted by the relatively small economic benefits attributable to the restriction. One of many advantages associated with permitting public sector pension plans to invest in a diversified market portfolio is that the resulting additional demand for equities provides an opportunity to eliminate the 10 percent rule with almost no net impact on the capital markets. The two policy changes would have offsetting effects.

5.3.2 Venture Capital Investments

A recent change in federal tax legislation provides an incentive for private pension funds to engage in Canadian venture capital investments. The incentive consists of a 3-for-1 relaxation of the limitation on foreign investments that is earned by eligible venture investments. While the incentive has not yet had much impact on pension investment practices, it reflects the political demand for actions that encourage the development and financing of new Canadian ventures. The merit of providing incentives for increased venture capital investment is discussed in the next section.

5.4 Should Additional Intervention Occur?

Regulation of the way pension funds can be invested can only be justified if it can be shown that without that intervention, some sector of the economy will suffer a shortage of investment capital. A shortage of capital exist in a sector if there are investment opportunities in that sector which cannot raise financing although they offer risk-adjusted returns comparable to projects in other sectors that do attract financing. If that situation occurs, then it can be said that there is a failure in the capital market. Of course, the fact that some entrepreneurs who think they have wonderful investment ideas cannot get financing, does not demonstrate a capital market failure.

If there is not a failure in the capital market, it is highly unlikely that the benefits of regulating the investment of public sector pension funds would exceed the costs, because the regulations would only have an effect if they forced pension managers to make investments that they would not make if their investment objective was only to maximize their risk-adjusted return.

As noted earlier, there are two areas of the economy which are most frequently cited as those which may suffer from capital market failures: venture enterprises and regional industry.

5.4.1 Venture Investment

The issue of venture investment and the role that public sector pension funds can and do play in financing this area is the subject of a parallel study commissioned by the Task Force.[23] The study found that a few of the large public sector pension funds are already active in venture investing and pension funds in general should not be mandated or directed to increase their activity. In light of that work, the comments which follow have been kept very brief.

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[23] See the Task Force Research Report "Venture and Prudence," by Venture Economics Canada.

The principal arguments for forcing more funds into venture investing is the critical mass (or infant industry) argument which was cited above, and the need to counter tax disincentives. The principal counter-argument is that alternative policies, such as strengthening existing tax measures (such as the tax incentives for Small Business Development Corporations) or possibly introducing a stock investment plan for individuals such as that introduced in Quebec, provide better approaches. Even if it is desirable to increase venture investing, there is no reason for singling out public sector pension funds as the source of that additional investment. Since there may be costs to a policy which increases venture investing, an incentive which affects all investors would be preferable to one which affects only one type of investor is preferable. Furthermore, it should be an incentive which attracts investment rather than forcing it, by transferring some of the costs of that investment to the treasury rather than to public sector pension funds.

The only appropriate measure with respect to public sector pension plans is to remove existing barriers to investing in a fully diversified portfolio of market investments, including some amount of venture investing. The venture capital market is sufficiently active, with new mechanisms facilitating investment in venture enterprises, that to simply open the doors for funds with $14 billion in assets to invest in market securities of all types, some spillover benefit to the relatively small venture market can be expected.

5.4.2 Regional Investment Guidelines

The rationale for imposing guidelines for regional investment is discussed in the previous section. The arguments against using public sector pension funds for venture investing also speak to the appropriateness of using pension plans for regional development. Again, tax incentives have the major benefit of being clearer as to their purpose and more readily-identifiable costs. Pension funds should not be required to carry the cost of government policy in this area, any more than they should be used to subsidize any other government programs.

5.5 Conclusions

The best policy for pursuing the objective of economic growth is to apply the same investment rules to public sector pension plan as apply to private sector plans. The sole concern of management should be to maximize the risk adjusted return on investment, given the anticipated cash flow requirements of the fund. That objective will not only serve to either increase the benefits to plan members as much as possible or reduce the cost to plan sponsors, but it will ensure that fund managers will seek to invest in opportunities that promise the best return to the investor and to the economy. Hence, existing restrictions such as the 10 per cent rule should be relaxed or eliminated.

Where it is considered desirable to promote particular kinds of investments, such objectives should be implemented through investment tax incentives or subsidies. Such incentives are substantially more efficient from an economic viewpoint than restrictions on pension fund investments.

CHAPTER 6: THE IMPLICATIONS OF CENTRALIZING PUBLIC SECTOR PENSION MANAGEMENT

One of the policy alternatives being addressed by the Task Force is the centralization of management of public sector pension funds. This chapter explores the likely consequences of centralization and examines the type and degree of centralization that would be beneficial to pension plan members and to the Ontario economy.

The analysis of the chapter is divided into five sections. Section 6.1 discusses the advantages and disadvantages of centralization of management in general terms. Section 6.2 discusses the alternative forms of centralization. Complete centralization of all of the functions of public sector pension funds is only one possibility. Other less extreme forms of centralization are viable alternatives for responding to the issues raised in section 6.1. The impact of the primary centralization alternatives on the capital markets is examined in section 6.3. Section 6.4 discusses the implications of alternative forms of centralization for the development of the Ontario economy. Concluding comments regarding the centralization question are presented in section 6.5.

6.1 The Advantages and Disadvantages of Centralized Management

There are three important rationales for centralizing the management of pension funds: increased administrative efficiency, increased internal investment expertise, and increased ability to diversify risk. Counterbalancing the potential benefits are concerns about possible disadvantages, the primary ones being reduced flexibility to meet the needs of the members of particular pension plans, and the risk that centralized decision making will reduce the efficiency of the Canadian capital markets. In this section, each of those benefits and disadvantages is discussed below. In addition, the empirical evidence available to the Task Force that bears on this question is reviewed.

Centralization is not an all or nothing decision. It is possible to centralize only selected functions, such as plan administration, or investment research. Hence, it is important to identify the functions that should be centralized and those that should not. It also is possible to achieve some degree of centralization without pooling all public sector pension funds. Hence, it is important to identify the degree of centralization necessary to realize the benefits sought and avoid the potential problems.

6.1.1 Increased Administrative Efficiency

It is evident that there are substantial fixed costs to administering a pension plan. With staff, computer facilities, and procedures in place, the per member cost of administering a plan decreases as the scale of the administration function is increased. The administrative activities involved in running a pension plan are separable from investment activities. Hence, scale efficiencies can be achieved by integrating the administration of small plans, or by integrating pension plan administration with other payroll functions. That does not imply the need for the creation of uniform pension plans across different work groups, or the centralization of investment activities.

At the present time, Ontario public sector pension plans keep their administrative costs down in several ways. Many of the smaller plans are handled by insurance companies. In effect, centralization is accomplished by the insurance company which sells pension plans, and other products, to many different groups and manages them commonly. There is no evident concern that the administrative costs of smaller plans are too high, nevertheless, it would be feasible for the Ontario government to provide a centralized administrative organization which could be available to all public sector pension funds.

6.1.2 Increased Internal Investment Expertise

Investment management also has high fixed costs. Larger, or centralized, funds will have lower costs per dollar invested for a given investment strategy requiring a given level of investment research. Consequently, only the largest Ontario public sector pension funds have developed the internal investment management expertise to manage their own funds. Most plans farm out the investment function to professionals, which has the effect of centralizing that function for the clients of the external investment manager. The only internal expertise that is truly required is the ability to evaluate the performance of external managers in order to ensure that the funds are invested properly.

The investment industry in Canada is large and very competitive. It is difficult to imagine any public sector pension fund, regardless of its size, having difficulty meeting its investment management needs by hiring external fund managers. The only relevant question is whether pension funds would be better served by placing their funds with an investment management team established by the government to serve the public sector pension funds or by private sector investment managers.

It is our view that if a service is established which provides centralized fund management to public sector pension funds, no fund should be forced to use that organization rather than the private sector fund manager of their choice. If a public sector investment manager is able to achieve better investment returns than private sector fund managers, after taking transaction costs into account, then the pension funds will make use of their services. However, if it is not competitive with the private sector, individual funds should be able to make use of private sector fund managers. The question of the form of investment management centralization is explored further in section 6.2, below.

6.1.3 Increased Ability to Diversify Risk

It is a standard investment principle that diversification can decrease risk without reducing the investment return - or, to say it another way, the return on investment can be increased without increasing risk. Consequently, it benefits any risk-averse investor to diversify sufficiently to hold an "efficient portfolio," where an efficient portfolio is one for which the risk cannot be reduced without decreasing the return - or the return increased without increasing the risk - through additional diversification.

A pension fund may not be efficiently diversified for two reasons. First, if those responsible for investment decisions lack the expertise to properly manage the portfolio, it may be unwisely invested. The issue of investment management expertise was dealt with in the previous subsection. There is no evidence that any funds are inefficiently invested due to the inavailability of investment management expertise.

The second reason that a portfolio may not be efficiently diversified would be if it were too small. That is a problem faced by many individual investors which is an important reason for investing in mutual funds, but it would certainly not be a problem for a fund with as little as $1 million in assets. This is simply a problem of transaction costs, which can be high as a percent of value for small transactions. The alternative discussed in section 6.2 of providing a type of mutual fund that the smallest public sector pension funds could invest in, would resolve this problem for the tiny public sector pension funds, most of whom currently avoid the problem by making use of the pension packages offered by insurance companies.

6.1.4 Reduced Flexibility

The appropriate investment portfolio for a pension fund depends on many factors including the anticipated cash flow requirements, the risk preferences of the members and sponsors of the pension fund, and the way members and sponsors are affected by a high or low investment return - that is, who bears the investment risk. A centralized fund should have sufficient flexibility to meet the individual needs of the different pension groups that it covers. To do so, adds complexity and reduces the potential benefits of centralization discussed above. If the different individual funds being managed by a single centralized fund require separate portfolios, then the operations of the centralized manager would be similar to those of external managers.

Furthermore, in a very large centralized fund, especially one that encompassed all of Ontario's public sector pension plans - there are over 100 -it is likely that the members of small plans may feel that their needs do not receive adequate attention. They could easily get lost in the shuffle.

To avoid these problems, it would be desirable to centralize funds only if i) they are so small that they would benefit from centralization, and ii) the funds being centralized are compatible in terms of their administrative needs and investment objectives. That approach would minimize conflicts among the participants in a centrally-managed fund. Furthermore, funds should not be forced to centralize. All that is needed is to ensure that the regulations governing public sector pension plans should not inhibit centralization of those funds wishing to integrate their operations,

6.1.5 Reduced Efficiency of the Canadian Capital Markets

Efficient capital markets require a large number of competing investors. Investors that are very large relative to the total market reduce efficiency in several ways. First, large investors tend to trade large blocks of shares. If the holdings of a single investor, for example a centralized fund for all Ontario public sector pension funds, are large compared to the normal trading volume of the shares that they hold, then it can be difficult for the large investor to execute a trade with affecting the price detrimentally. If every time the fund enters the market to buy securities its action drives the price up, and whenever it sells the price is driven down, the funds investment return would be reduced. Other investors would also be affected by the price instability that arises when the depth of the market is insufficient to absorb the trades of large investors.

Efficiency also depends on there being sufficient diversity among investors that the distribution of perceptions about the value of particular securities among investors reflects the uncertainty associated with the value of that security. If a small number of players in the market tend to dominate trading, the market can be destabilized because prices will respond to the expectations of those few players. As the Law of Large Numbers says, a large number of independent decision-makers is needed for the aggregate effect of their decisions to be stable.

The concentration of assets in the Canadian capital markets are already greater than in the other major markets of the world. Hence, the Canadian markets are less efficient than the major competing markets. As a consequence, both investors and issuers have an incentive to make greater use of the major international markets (New York, London, and Tokyo) at the expense of the Canadian markets (particularly those based in Toronto and Montreal). Given the recent actions by the Federal, Quebec and Ontario governments to make the domestic securities industry more open and, hopefully, more competitive, it would be inconsistent to adopt a policy which works against the objective of increasing the efficiency of the Canadian market.

6.1.6 Evidence on Fund Size and Performance

It would be expected that if the benefits of increased administrative efficiency, increased internal investment expertise, and increased ability to diversify risk are significant, small funds would tend to have lower returns than large funds. The Task Force Survey collected data on the returns earned by Ontario public sector pension funds which provide empirical evidence on that point. The data, presented in Figures 8 and 9 on the next page, show that among the 20 funds for which 1985 rate of return data are available, having assets ranging from $20 million to over $6 billion, there was no correlation between the size of the funds and their returns. Figure 8 shows all 20 funds, while Figure 9 shows only the 17 funds with less than $1 billion in assets.

While there was less dispersion among funds with more than $300 million in assets than was the case for smaller funds, as many of the smaller funds outperformed as underperformed the larger funds. Those results indicate that size has not hurt the performance of the smaller funds, although maintaining a minimum fund size of about $300 million may reduce risk.

While that finding in itself is not conclusive proof that Ontario public sector pension funds with assets in excess of $20 million would not gain noticeably from centralization, it does corroborate the general industry view that centralization is likely to benefit only the smallest funds. It appears that either the gains of centralization are negligible - at least for plans with more than $20 million in assets - or else the benefits can be obtained in other ways, such as utilizing outside management.

Taking into account the rate of return data collected by the Task Force and the observation that the market provides many substitutes for centralization that allow funds to maintain their autonomy, it is our view that a policy of forced centralization of fund management cannot be justified. It would not be inconsistent with this view for a government agency to provide centralized management services to smaller public sector pension funds, provided that the individual funds retain the option of using either the centralized services, internal management, or private sector pension managers. Under those conditions, the publicly provided management services would only be utilized if they did in fact provide benefits to the funds they manage.

Figure 8: RETURN ON INVESTMENT BY SIZE OF FUND

(20 funds reporting returns)

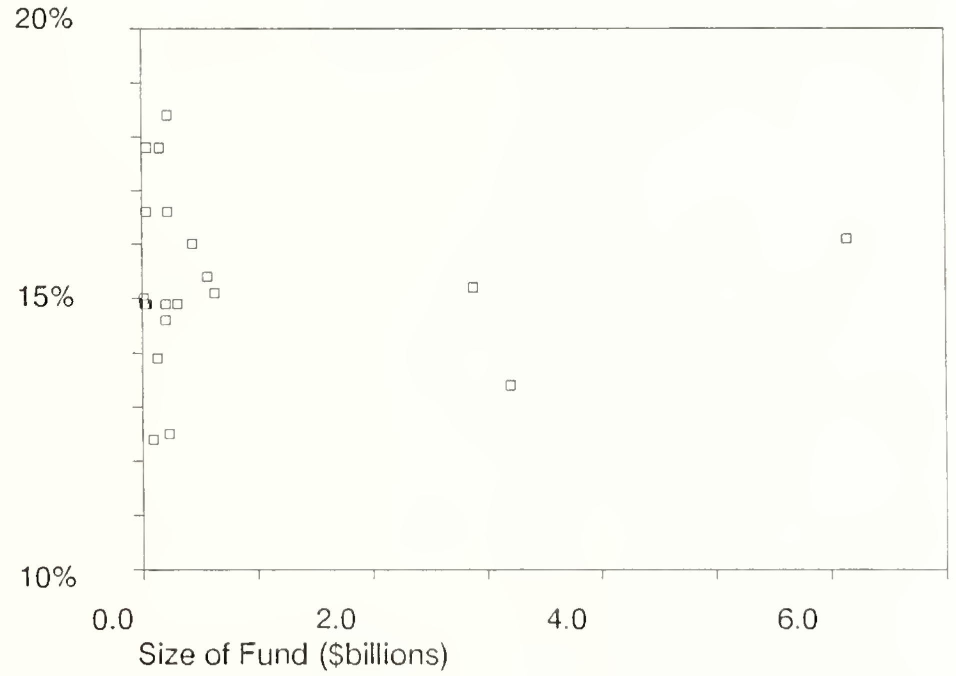
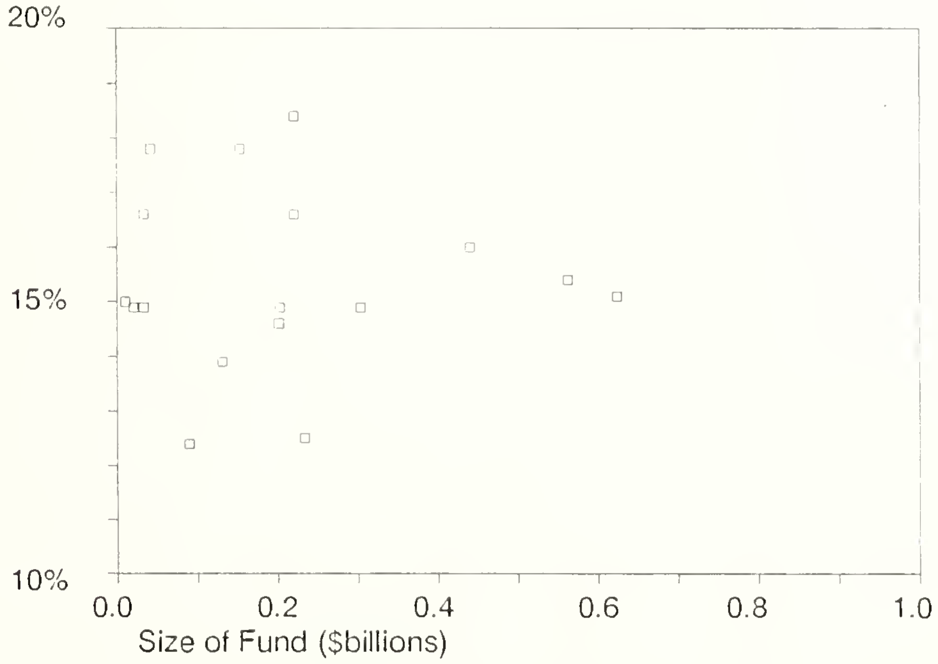


Figure 9: RETURN ON INVESTMENT BY SIZE OF FUND

(17 funds under $1 billion reporting returns)



6.2 Alternatives to Complete Centralization

The benefits of administrative efficiency and risk diversification for very small funds can be achieved without completely centralizing the management of public sector pension funds. Management can be decentralized in several different ways. The most obvious way to gain the benefits of increased scale while maintaining a partially decentralized structure is to centralize the smaller pension funds, while continuing to manage the larger ones on a decentralized basis.

6.2.1 The OMERS and HOOPP Models

One possible approach would be to centralize pension funds to create homogeneous groupings that have significant assets. Based on the evidence noted above that there was no observed correlation between size and rate of return, it could be argued that centralized funds with as little as $20 million would qualify as having significant assets. Views of industry participants of what would constitute a significant fund ranged as high as $1 billion dollars. Certainly, funds with $1 billion in assets would find that there would be no barriers to their ability to participate in any type of investment activity currently available in the international capital markets. That, however, is far beyond the minimum necessary to allow fund managers to diversify the portfolio as much as they deem appropriate, and it is large enough to afford the cost of top quality management while keeping the administrative cost reasonably low as a percent of assets.

Whatever groupings are formed should be homogeneous in terms of the investment objectives that are appropriate for the plans in the group, and in terms of the ability of the pension plan members to see that they have common interests. Both OMERS and HOOPP serve as models of centralization. They have achieved good investment results, and appear to adequately serve the needs of the various pension funds they handle. In both cases, the pension plans being served are compatible, with OMERS serving funds of municipal and local agency employee groups and HOOPP serving hospital employees. In our view, the HOOPP model is preferable in that participation in that centralized management service is voluntary. Pension plans that think they can do better with internal or other external fund management are free to do so.

6.2.2 Public Sector Pension Mutual Funds

An alternative approach would be to set up a series of public sector pension fund "mutual funds." They would be a series of funds which would invest in particular types of investments. There could be one or more funds investing in equities, perhaps with different objectives in terms of the trade-off between risk and return, or the investment horizon. Others could invest in bonds, mortgages, venture capital, foreign equities, etc. Individual public sector pension funds could then allocate their assets to the different mutual funds in any manner they wished.

The advantage of this approach would be that individual pension funds could select the mutual fund mix which best met their investment objectives. While investment in each particular type of asset would be centralized, providing substantial scale and diversification economies, each individual pension fund would retain maximum flexibility.

6.2.3 Centralized Services

A third alternative would be to centralize only particular services. For example, a centralized bureau could offer administrative services. Another could provide investment advice. This approach would be attractive if it could be shown that the smaller funds find it difficult to provide certain types of services on their own and that those services are difficult or expensive to buy from the private sector.

Our interviews did not uncover significant concern about the availability of any of the services required by public sector pensions, either large or small. However, there was occasional concern mentioned about the ability of smaller funds (and very large centralized funds such as OMERS and HOOPP) to service their members well. Areas of particular concern were the dissemination of information and answering questions about the plans for members. This problem was not attributed to difficulty in providing the service, but to a lack of concern on the part of those responsible for administering the funds.

6.3 The Impact of Centralization on the Capital Markets

If the management of all of Ontario's public sector pension plans were centralized at the end of 1986, the fund would have about $40 billion in assets. It would grow at the rate of over $4 billion annually for the balance of this decade and at a somewhat higher rate through the 1990's. Within the Canadian capital markets, such a fund could have a dominant presence. However, in the international capital markets, it would not be a substantial player. In fact, it would be dwarfed by many of the major foreign institutional investors currently active in the international market.

Given the normal asset mix of pension funds, and the type of equities that they generally limit themselves to, it would be difficult to stay below the 10 per cent level of ownership.[24] The Caisse owns close to 10 per cent of all Canadian banks, making it the largest shareholder of each bank. The assets of a totally centralized Ontario public sector pension fund would exceed the assets of the Caisse. If the centralized fund owned in excess of ten percent of widely-held corporations, then their fiduciary responsibilities could force fund managers into playing a more active role in influencing managerial decisions than is considered desirable. Of course, if corporate control through the investment of pension fund assets is intended to be used as an instrument by which government can affect corporate decisions, then centralization would facilitate that objective. However, as the discussion of pension funds and corporate control in section 3.3 shows, our view is that the financial power that would be inherent in a centralized pension fund is not an appropriate policy instrument for influencing corporate decisions.

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[24] See the discussion of the size of the Ontario public sector pension funds relative to the Canadian capital markets which appears in section 2.1.

One way to reduce the high level of ownership that would be implied by centralization would be to raise the limits on ownership of foreign equities. In the international equity market, a centralized fund could diversify sufficiently to dilute its ownership of individual corporations.

A centralized fund would be the largest single investor in the Canadian capital markets. Market efficiency can be harmed when individual pools of capital are too large relative to the size of the market since capital movements can destabilize prices. Canada's capital markets are less efficient than those of New York, London or Tokyo because both market depth and breadth are less in Canada. Adding several large institutional players - for example, by moving the Teachers and PSSF from marketable to non-marketable, centralizing smaller funds and possibly creating an Ontario CPP fund investing in market securities - would increase the efficiency of the Canadian capital markets, but introducing a single large fund would have the opposite effect.

6.4 Centralization and Economic Development

Chapter 5 discussed the use of public sector pension funds for pursuing economic objectives. It was concluded that all public sector funds should be subject to the same investment constraints as private sector funds. Investment constraints that might be applied to all pension funds, for example the 10 per cent foreign asset rule, would work equally well whether the public sector funds were centralized or not. The only circumstance in which a centralized fund would have an advantage would be if the fund was to be used to intervene in corporate decision, such as the location of new facilities, by taking a large enough interest in companies to influence their decision-making. That strategy was ruled out in chapter 5.

6.5 Conclusions

Some small funds could reduce their administrative costs by centralizing their administrative functions. In part, that is what is being done when public sector pension funds with small memberships set up pension plans with insurance companies. The insurance companies provide common administrative services to the plans they handle.

A second potential benefit of centralization arises because small funds cannot afford to maintain internal investment research teams. Consequently, the caliber of internal investment management could be improved by centralizing their investment activities. However, most trusteed plans realize that benefit by using external fund managers. Those investment professionals manage several funds; hence, they in effect are centralizing the investment management function without centralizing the funds themselves.

There are also potential benefits of centralization related to increased diversification which smaller funds can realize by using external investment managers. Outside investment managers may treat the assets of several pension funds almost as if they were pooled, provided the investment objectives of the plans are consistent. Small funds can also realize that benefit by investing some of their assets in "mutual funds" which invest the pooled assets of several pension funds in particular types of activities. That strategy has been used by a number of pension funds for venture capital investing.

The key question is: How large must a fund be to realize the economies of scale in their operations? There are many mutual funds and independently managed pension funds which have less than a billion dollars in assets and are able to achieve investment performance, net of administrative costs, that matches and often surpasses the performance of multi-billion dollar funds. That fact indicates that at least the six largest Ontario public sector pension funds have little to gain from further centralization.

A further important conclusion is that while some degree of centralization may be beneficial for smaller funds, excessive centralization can be counterproductive. If a centralized fund must tailor its investment strategy to the needs of individual groups that it serves, the benefits of centralization will be reduced. Since every pension fund has unique characteristics, centralization makes sense only for funds with similar investment objectives and with members having similar needs.

Another problem arises because the size of individual transactions tend to increase with the size of the total fund. If Ontario's public sector pension funds were fully centralized, there would almost certainly be less investment in smaller companies. Any transaction large enough to be worthwhile for a $30 billion fund, would destabilize the share price of most small companies. Very large institutional investors normally restrict their investments to companies with large new issues or large floats of outstanding shares. That restriction would be detrimental to both the return earned by the centralized fund and the availability of capital for small Ontario corporations.

A final problem is that excessive centralization would reduce efficiency in the Canadian capital markets. Canada's capital markets are presently less efficient than the major international markets because there are fewer issues being traded, less depth in the issues that are traded and fewer participants making independent investment decisions. In our view, any changes in the policies governing the investment of public sector pension plans in Ontario should aim to increase the number of significant players in the market. That can be achieved by developing centralized pools of the assets of the funds which are too small to have independent investment portfolios, and by removing the constraints blocking the three non-market funds from holding diversified market portfolios. The capital market efficiency objective would be negatively affected by centralizing the investment management of the larger funds.

CHAPTER 7: CONCLUSIONS

Public sector pension funds --indeed, all pension funds-- have played an increasingly important role in the Canadian capital markets over the past few decades. The outlook is that their growth in importance will continue, even though (as chapter 2 noted) public sector pension saving will likely decline as a fraction of total private saving. The magnitude of the assets of public sector pension funds is large enough that the way in which future public sector pension savings are invested will affect the performance of the Canadian economy.

The issues addressed in this report all deal with the effect of changes in public sector pension fund investment policies and procedures on the capital markets and on the Canadian economy. The principal questions we were asked to deal with were the following:

1. What will be the impact of allowing the Ontario public sector pension funds whose investments are now limited to non-marketable provincial debt to invest in diversified market portfolios?
2. If Ontario public sector pension funds invest in diversified market portfolios, should they follow different investment guidelines than those set out in government regulation of private sector pension investment?
3. Should the investments of Ontario public sector pension funds be managed on a centralized and consolidated basis?

The previous chapters of this report have analyzed these three questions as well as providing background information on the relative size and growth of public and private pension funds. In this chapter, we summarize the results of our analysis, dealing in turn with each of the three questions listed above.

7.1 The Impact of Moving to Diversified Market Investments

Investing the assets of Ontario public sector pension funds in marketable investments could have only beneficial effects on the Canadian capital markets and on the Canadian economy. The capital markets can easily absorb the likely flows of investable funds into the markets from Ontario public sector pension funds, assuming the existing non-marketable investments are reallocated to the capital markets as they mature. The most important effects on the capital markets would include a broadening of the market for Ontario bonds, an increased demand for Canadian equities, and some reduction in the cost of equity capital to Canadian business.

The ability of the capital markets to absorb the reallocated investment flows of Ontario public sector pension funds depends on the speed with which such reallocation occurs. We have assumed that any contemplated policy change will be restricted to the reallocation of the future flow of funds available for investing, including only interest and maturing principal on assets currently invested in non-marketable Ontario bonds. This implies a gradual transition for the asset composition of public sector pension funds. In our view, it would be unwise to contemplate an appreciably faster transition.

Our analysis starts with a projection of the magnitude of the potentially reallocated funds. Our projections indicate that, over the next decade, the total magnitude of the investment flows which could be reallocated under the restriction we have assumed will amount to between $2.1 billion and $2.5 billion per year (measured in dollars of 1987 purchasing power) for the major public sector pension funds now invested in non-marketable

Ontario bonds. These flows would be increased by another $0.9 billion per year if the Ontario share of Canada Pension Plan flows were also included.

Though significant, these funds are a small fraction (less than 2.5 per cent) of the projected magnitude of total annual private saving in Canada over the next decade. Moreover, the size and implications of the likely reallocation of funds would not represent a sudden change. It would be anticipated by market participants well in advance. A predictable movement of funds of this size is well within the absorptive capacity of the Canadian capital markets.

The extent to which investable funds would actually be reallocated from provincial government bonds to other investments is of course dependent on a number of factors, including potential changes in governance and structure of the public sector employee funds that are now restricted to non-marketable Ontario bonds. However, under most scenarios that might be anticipated, it is likely that a substantial fraction of the investable funds would be allocated to equities during the first decade in which such investments could be made. In our projections, we assumed that as much as 80 percent of investment flows might initially be allocated to equities and other investments, once public sector pension funds are able to assemble an investment management team. Even at that relatively high rate of investment in non-debt assets, it would take a decade to bring the asset composition of the public sector pension funds in line with the norm for other pension funds.

Assuming that the public sector funds would be subject to investment restrictions similar to those to which private sector pensions are now subject, the effect of this new source of demand for equity investments would be to increase the total demand for Canadian equities relative to what it otherwise would be. This would result in some increase in the market value of Canadian equities, resulting in a corresponding reduction in the cost of new equity capital for Canadian businesses. In addition, the new source of demand would result in a broadening of the market for Canadian equities, which would make equity investments more attractive to other investors. Investing the assets of Ontario public sector pension funds in a diversified market portfolio will increase the availability of equity funds to Canadian business and enhance economic growth.

The increased demand for equities by Ontario public sector pension funds would of course be matched by a decline in the demand by such funds for bonds issued by the Ontario government. Other participants in the capital market would replace public sector pensions as purchasers of Ontario government bonds. Part of the replacement sources of demand for Ontario bonds would come from funds previously invested in Canadian equities that would be displaced by the public sector pension demand for equities as equity prices rose. In addition, it is likely that part of the replacement demand would come from foreign investors. With the increasing interconnection of international capital markets and the development of sophisticated new hedging instruments such as currency swaps to reduce borrowers' and lenders' exposure to foreign exchange risk, it has become much safer for the Ontario government to borrow abroad than was the case fifteen years ago. These developments have also made it less risky for foreigners to lend to Ontario.

A sizeable increase in the supply of marketable Ontario bonds will lead to a broadening of the market for Ontario government bonds and a consequent increase in the liquidity of investments in such bonds. It would be advisable for the Ontario government to take advantage of the potential for market broadening through raising its borrowing needs in the foreign as well as the domestic capital markets, providing that it makes effective use of hedging instruments to control its exposure to the risk of adverse movements in foreign exchange rates. The resultant internationalization of the market for Ontario bonds will reduce the cost of Ontario government borrowing over the longer run. It will also have a spillover effect on the ease with which large Canadian corporations can obtain funds on world markets. Canadian business and Ontario taxpayers both gain from an expansion in the breadth of the market for government bonds.

The combined effect of all of these impacts on the capital markets would be an overall increase in the aggregate flow of funds into the Canadian economy, with the bulk of the increase coming from increased flows from abroad. The magnitude of the increase would not be large relative to the total flows of funds, but it would contribute to an improvement in market efficiency and a reduction in the cost of capital to Canadian firms. This would be of benefit to the entire Canadian economy.

The terms of reference of this study limit our analysis to the impact of public sector investment policy on the capital markets and on the Canadian economy. Our conclusions must therefore be qualified by the fact that other considerations outside our terms of reference might lead to conflicting conclusions. Nevertheless, with respect to the questions we were asked to analyze, our conclusions are unambiguous. From the standpoint of its effects on the economies of Ontario and the rest of Canada, it would clearly be beneficial to permit all Ontario public sector pension funds to invest their funds in diversified market portfolios.

7.2 The Desirability of Using Public Sector Pension Funds to Pursue Economic Objectives

There are many social objectives that may be pursued through government intervention, including the promotion of economic growth within Ontario and within specific regions of Ontario. However, in evaluating whether such intervention should extend to public sector pension investment policies, it is necessary to ascertain whether this form of intervention is an efficient way of promoting the achievement of the desired objectives. There are alternative ways in which the government may intervene in the capital markets to promote social and economic objectives.

Our fundamental conclusion with respect to using public sector pension funds as an instrument for government intervention in the economy is that public sector pension funds should not be treated differently from private sector pension funds. Particularly if public sector pension funds are to be managed on a decentralized basis, it is of substantial value to be able to compare the investment performance of public sector pension funds with that of their private sector counterparts. Imposing rules for public sector pension investments that differ from the rules imposed on private sector pension investments reduces this comparability and so potentially provides an excuse for poor management.

It is difficult to find any rationale for imposing rules on public sector employee pension fund investments that differ from those imposed on private sector pension investments. There are thus no benefits from a differential treatment that would warrant giving up the important advantages obtained by maintaining the comparability of investment performance. Any restrictions on employee pension fund investments should thus be equally applicable to private sector and public sector pension funds.

The Canada Pension Plan is very different from a public sector employee pension plan. Its beneficiaries are all taxpayers, not just a few of them. Moreover, it is largely an unfunded, pay-as-you-go plan, so that future taxpayers rather than beneficiaries pay the cost of future benefits. There consequently may be more of a case for using Canada Pension Plan funds for public investments in the economy. However, even here, we conclude that it is better for CPP funds to be invested in the market and for public sector investments to be financed by government borrowing from the market.

On the issue of whether additional regulation of pension fund investments would be desirable, both for public sector funds and private sector pension funds, we conclude that other instruments such as tax incentives are more effective. Additional regulation of pension fund investments is not an effective means of enhancing the growth of the Ontario economy. In our view, regulation of pension fund investments should not go beyond what is required to protect the interests of plan members.

7.3 The Impact of Centralizing Investment Management

One of the major economic benefits arising from permitting public sector pension funds to invest their funds in diversified market portfolios is that doing so would increase market breadth and consequently market efficiency. This benefit is achieved to the fullest extent if public sector pension assets are managed on a decentralized basis.

There are several potential ways in which centralization might occur, ranging from administration through investment management to investment policy determination. Small funds may be able to reduce their administrative costs by pooling administrative functions. Administrative centralization can be achieved without centralizing investment management.

A potential benefit of centralizing investment management for public sector pension funds is that there are economies of scale in maintaining internal investment research teams. However, most small trusteed pension funds realize the benefits of such economies by using external fund managers. Small funds can also achieve these economies by investing in mutual funds.

The potential benefits of centralization are insufficient to warrant requiring Ontario's public sector pension fund investments to be centrally managed. There is no evidence that the many smaller funds among Ontario's public sector funds are suffering from high administrative costs or poor investment returns because they cannot find good outside professional managers.

In our view, any decision to centralize management functions for some of Ontario's smaller public sector pension funds should be a voluntary choice by such funds. The smallest funds should be encouraged to consider pooling administrative and management functions, but not required to do so. Voluntary participation in a shared administration, as in the HOOPP case, is preferable to mandatory participation.

The large Ontario public sector pension funds have little to gain from administrative or managerial centralization. From a policy viewpoint, further centralization of such funds should not be encouraged. Canada's capital markets are presently less efficient than the major international markets because there are fewer issues being traded, less depth in the issues being traded, and fewer participants making independent investment decisions.

In our view, any changes in the policies governing the investment of public sector pension assets should aim to increase market efficiency by increasing the number of significant independent participants in the market. For the large public sector pension funds, this objective is best achieved by removing the constraints blocking the three non-market funds (PSSF, TSF, and CPP) from holding diversified market portfolios and by encouraging them to pursue independent investment policies. If the Superannuation Adjustment Fund is maintained as a separate fund, its investments also should be managed independently.

7.4 The Impact of Public Sector Pension Investments

Ontario's public sector pension funds are large enough to affect the prices of assets traded in Canadian capital markets. It consequently matters for the Canadian economy how public sector pension assets are managed.

Recent tax and regulatory changes affecting private pension plans will encourage private employers to switch from defined benefit plans to defined contribution plans. Such a switch is likely to result in some decrease in private pension investments in equities. In these circumstances, an increased public sector demand for equities will offset any adverse economic effects of the regulatory changes affecting private sector pension plans.

From an economic viewpoint, it is difficult to see any losers from a decision to permit all Ontario public sector pension plans to invest their assets in a diversified market portfolio. The efficiency of the capital markets would be improved. Canadian business would benefit from the increased availability of equity funds. Ontario taxpayers as well as Canadian business would benefit from the impact of a broadened market for Ontario bonds. Ontario taxpayers and pension plan members would benefit from the higher average return on pension assets that would be accrued over the longer run.

The benefits for the Ontario economy are enhanced if the Ontario public sector pension funds are encouraged to pursue independent investment policies on a decentralized basis. Economic benefits are also enhanced if the government does not intervene in the investment decisions and policies of public sector pension funds. The government should not play any greater role in these decisions than it does in the investment decisions of private sector pension funds.

Appendix A NATIONAL SAVINGS, PENSION SAVINGS AND PENSION INVESTMENT: A STATISTICAL PROFILE

Pension savings play an important role in the national economy. As is seen in Table A-1, pension saving has accounted for roughly one-third of net Canadian saving in recent years. In 1985, the net increase in the accumulated assets of pension funds was $35.4 billion bringing the total accumulated pension assets to $288.2 billion (Table A-2). Current estimates indicate that total annual gross domestic saving currently is approaching the $100 billion level,[25] and total accumulated savings will be close to $1700 billion by the end of 1987 (based on 1985 data appearing in Table A-4).

The share of total savings accounted for by pension savings has increased radically in the last two decades, from about 12 per cent in the early sixties, to about 18 per cent in the early seventies, to over 30 per cent in the early eighties. During the same period, gross domestic savings as a percent of gross domestic product showed no trend.[26] The increased rate of pension saving represents an increase in total personal saving; that is, other personal saving has not declined as pension saving has increased.

Table A-2 also shows that less than 40 per cent of pension assets ($110.4 of the $288.2 billion total) are held in public and private sector trusteed pension plans. Just over one-half of the trusteed pension assets are in public sector plans (Table A-3). Another $79.2 billion of pension assets (27 per cent of the total), primarily in RRSPs and plans handled by life insurers, are managed by private sector financial institutions. The other one-third of pension assets are in public sector plans that are invested primarily in government debt, much of which is non-marketable.

In total, Canadian public sector pension plans, including the CPP and QPP had assets of over $150 billion in 1985. Ontario's public sector pension funds, excluding the Ontario share of the CPP, accounted for $32 billion. Assuming the 15 per cent average annual growth rate of pension assets experienced since 1980 continues, the value of Ontario public sector pensions, excluding the Ontario share of the CPP, will be over $40 billion by the end of 1987. That represents 11 per cent of total Canadian pension assets and about 3 per cent of total accumulated Canadian savings (Table A-4). If the Ontario portion of the CPP is included with Ontario public sector pension plans, their total assets would have been over $48 billion in 1985, or about 16 per cent of total pension assets and under 4 per cent of total accumulated saving.

Total accumulated saving, which is shown in Table A-4, includes large holdings in types of assets that attract little pension investment, in particular the largest category real estate, which includes residential

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[25] As shown in Table 1, Canada's gross domestic product (GDP) was $476 billion in 1985. The April 1987 issue of the Royal Bank of Canada's Econoscope reports an actual increase in GDP of 3.1% in 1986 and forecasts a 2.3% increase for 1987. Hence, the Canadian GDP should exceed $500 billion in the current year. Assuming gross saving remains close to 20% of GNP (Table A-1), it should be almost $100 billion in 1987.

[26] Although savings as a proportion of GDP has been declining since 1980, similar declines which proved to be temporary may be observed historically.

Table A-1:SAVINGS IN CANADA BY MAJOR SOURCE AS A PROPORTION OF GDP, 1981 - 85

	1981	1982	1983	1984	1985
	(millions of current dollars)				
Gross Domestic Product	355,994	374,750	405,425	443,327	476,361
	(per cent)				
Gross domestic savings[1] as a proportion of GDP	22.4	19.2	19.2	19.9	19.2
Gross saving[2] as a proportion of GDP	24.5	18.8	18.8	19.5	19.6
Composition of gross savings[3]	100.0	100.0	100.0	100.0	100.0
Personal saving	52.6	63.9	53.1	51.8	52.4
Pensions[4]	16.7	18.2	19.3	16.8	22.1
Other	35.9	45.7	33.9	35.0	30.3
Corporate saving	32.5	27.1	40.2	42.0	45.9
Government saving	4.5	-12.2	-16.6	-15.9	-17.6
Pensions[4,5]	6.8	9.0	6.6	6.2	6.6
Other	-2.3	-21.1	-23.3	-22.2	-24.2
Foreign saving	8.1	-1.8	-1.8	-1.8	1.8
Pension saving as a prop'n of net saving	23.9	34.6	33.2	29.9	34.2

Notes:

1. Includes capital consumption allowances but excludes foreign savings.
2. Includes capital consumption allowances and foreign savings.
3. May not add to 100 due to rounding and omission of statistical discrepancy.
4. Personal pension consists of the flow of funds into the trusteed plans of the public and private sectors. Savings by way of life insurance is included in other personal savings.
5. Government pension savings consist of the flow of funds into the federal government consolidated revenue fund and CPP/QPP.

Sources:

Statistics Canada, National Income and Expenditure Accounts, various issues, Cat. 13-001
Statistics Canada, Trusteed Pension Plans Financial Statistics, various issues, Cat. 74-201
Statistics Canada, Financial Flow Accounts, various issues, Cat. 13-002.

homeownership, and claims on future generations, which represents unfunded pension obligations (primarily CPP, QPP, and Old Age Security). Consequently, it is necessary to examine the allocation of pension funds to particular types of assets to determine the impact of pension investment on the capital markets. That is done in Appendix B.

Table A-2: ACCUMULATION OF CANADIAN PENSION ASSETS

(year end, billions of current dollars)

	Public Plans		Employer Sponsored Plans				Personal Savings		Total
	CPP	QPP	Consolid. Revenue Fund	Trusteed Pensions Public/Private	Life[1] Insurers	Gov't of Canada Annuities	Total[2] RRSP's	Other	
1980	18.4	6.7	28.4	51.7	21.5	0.8	14.5	1.5	143.4
1981	20.8	7.6	32.8	61.5	23.5	0.7	17.8	1.8	166.6
1982	23.7	8.4	38.6	71.9	26.5	0.7	22.2	1.5	193.6
1983	26.0	9.2	44.3	84.8	30.0	0.7	27.4	1.6	224.2
1984	28.9	9.9	50.4	96.3	32.9	0.7	32.1	1.6	252.8
1985	31.1	10.4	57.0	110.4	38.1	0.7	39.4	1.0	288.2

Notes:

1. Includes RRSP's in the general fund of life insurers.
2. Excludes RRSP's in the general fund of life insurers.

Source:

Statistics Canada, Financial Institutions Financial Statistics, various issues, Cat. 61-006

Statistics Canada, Trusteed Pension Plans Financial Statistics, various issues, Cat. 74-201.

Table A-3: CANADIAN PENSION FUND ASSET DISTRIBUTION - 1985

	Debt Type Assets (%)				Ownership Type Assets (%) (stocks and real estate) Total	Overall Amount ($billions)
	Non-Gov't	Gov't Marketable	Gov't Non-Marketable[1]	Total		
Employer Plans						
Private Sector	36%	28%	0%	64%	36%	$54
Public Sector I[2]	28%	23%	28%	79%	21%	$56
Public Sector II[3]	0%	0%	100%	100%	0%	$57
Universal Plans						
CPP	0%	0%	100%	100%	0%	$31
QPP	0%	75%	0%	75%	25%	$10

Notes:

1. Public sector trusteed plan holdings of non-marketable debt is an estimate based on Ontario only.
2. Trusteed Plans (Crown Corps., health and educational, provincial and municipal)
3. Consolidated Revenue Plans

Sources:

Statistics Canada, Trusteed Pension Plans Financial Statistics, various issues, Cat. 74-201.
Statistics Canada, National Income and Balance Sheet Accounts, 1986, Cat.13-214.
Statistics Canada, Financial Institutions Financial Statistics, various issues, Cat. 61-006.
Task Force on the Investment of Public Sector Pension Funds survey statistics.
Caisse de Depot et Placement du Quebec, Annual Report, various years.

Table A-4: SOURCES AND DISTRIBUTION OF CERTAIN SAVINGS AT THE END OF 1985

(billions of current dollars)

Sources of Savings	Total Accum. Savings	Real Estate[1]	Mortgages	Stocks	Marketable Gov't Bonds	Non-market Gov't Bonds[2]	Other Bonds	Cash/ Deposits/ Money Mkt[3]	Other	Claims on Future Generations
Persons, other than through pensions										
RRSP's[4]	40	-	1	3	1	-	-	35	-	-
Other[5]	1227	514	10	169	59	-	6	252	217	-
Sub total	1267	514	11	172	60	-	6	287	217	-
Occupat'l pension funds										
Private sector employees	54	1	3	19	15	-	5	7	4	-
Public sector employees	56	1	4	11	13	15	4	7	1	-
Consolid. revenue plans for other gov't employees	57	-	-	-	-	57	-	-	-	-
Sub total	167	2	7	30	28	72	9	14	5	-
Universal plans										
CPP[6]	31	-	-	-	-	31	-	-	-	280
QPP[7]	10	-	1	2	7	-	-	-	-	53
Sub total	41	-	1	2	7	31	-	-	-	333
TOTAL	1475	516	19	204	95	103	15	301	222	333

Notes:

1. Real Estate for persons includes residential and non-residential structures and land
2. Public sector pension fund data available at the end of 1985 only.See note 1 in Table 3.
3. Net of debt, loans outstanding or amounts payable
4. Excludes RRSP's in general funds of life insurers
5. Other personal savings is calculated as the difference between the sub total of accumulated personal savings and RRSP savings.
6. An estimate of the unfunded portion of CPP was provided by the Department Insurance.
7. Estimate of the unfunded portion at the end of 1982.

Sources:

Statistics Canada, National Income and Balance Sheet Accounts, 1986, Cat.13-214.

Statistics Canada, Financial Institutions Financial Statistics, various issues, Cat. 61-006.

Statistics Canada, Trusteed Pension Plans Financial Statistics, various issues, Cat. 74-201.

Task Force on the Investment of Public Sector Pension Funds survey statistics.

Caisse de Depot et Placement du Quebec, Annual Report, various years.

Appendix B QUANTITATIVE OVERVIEW OF PENSION INVESTMENT POLICIES

The trend in recent years has been for public and private sector trusteed plans to become more similar in terms of their asset distributions. Table B-1 shows the asset distribution of private sector plans for the years 1980 through 1985.[27] Over that period the proportion of their assets invested in government bonds has increased 30 per cent, with that increase being offset by reduced holdings of corporate bonds. The total bond holdings have been almost constant. The proportion invested in stocks has also increased by 30 per cent, with investment in mortgages being cut to less than half of the 1980 proportion and other assets declining by almost 15 per cent.

Table B-1: ASSET DISTRIBUTION OF PRIVATE SECTOR TRUSTEED PENSION PLANS
(per cent)

	Gov't Bonds	Other Bonds	Stocks	Mortgages	Real Estate	Other
1980	21.4	14.0	25.6	12.2	1.2	25.5
1981	21.3	12.8	27.7	11.2	1.4	25.5
1982	22.4	11.9	28.2	9.8	1.9	25.8
1983	23.6	10.3	32.8	8.4	2.3	22.5
1984	25.2	8.9	33.0	6.7	2.7	23.5
1985	27.6	8.8	34.1	5.2	2.4	21.9

Sources:
Statistics Canada, National Income and Balance Sheet Accounts, 1986, Cat. 13-214
Statistics Canada, Trusteed Pension Plans Financial Statistics, various issues, Cat. 74-201.

On the other hand, trusteed pension plans of provincial and municipal governments and their crown corporations (Table B-2) have reduced the proportion of their assets invested in government bonds by over 20 per cent. Like the private sector trusteed funds, they have reduced their share of investment in corporate bonds and mortgages and increased the share of assets invested in stocks and in real estate. Although the public sector trusteed funds still must increase the share of their assets invested in stocks by over 50 per cent and decrease the share invested in government bond by 40 per cent in order to match the distribution of assets of private sector plans, the gap has been closed significantly since 1980.

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[27] Table A-3 of Appendix A also reports the distribution of pension assets but the breakdown is different. In the earlier table other bonds, mortgages and other assets are included in the category of non-government debt type assets. Real estate is included with stocks in the ownership type asset category.

Table B-2: ASSET DISTRIBUTION OF TRUSTEED PENSION PLANS OF PROVINCIAL & MUNICIPAL GOVERNMENTS AND THEIR CROWN CORP'S
(per cent)

	Gov't Bonds	Other Bonds	Stocks	Mortgages	Real Estate	Other
1980	57.5	8.8	12.3	11.8	0.3	9.2
1981	50.6	9.1	12.9	10.5	0.7	16.3
1982	48.7	8.9	14.3	9.8	0.9	17.4
1983	47.6	7.6	17.9	8.6	1.5	16.9
1984	45.2	7.4	19.3	8.0	1.7	18.3

Sources:
Statistics Canada, National Income and Balance Sheet Accounts, 1986, Cat. 13-214
Statistics Canada, Trusteed Pension Plans Financial Statistics, various issues, Cat. 74-201.

The trend for public sector trusteed plans to invest more like private sector plans reflects changing attitudes regarding public sector pension plans. Some major pension plans, for example OMERS, have been converted from plans holding non-marketable government bonds exclusively to plans that are free to invest with the objective of maximizing their return. The trend reflects the fact that the conversion process which is still underway. Where public sector pension plans have not been constrained in their investment decisions they already closely resemble private sector plans. The distribution of assets of trusteed pension plans of federal crown corporations (Table B-3) are quite similar to that of private sector plans, for example.

The General Fund[28] of the Caisse de Depot et Placement du Quebec (the Caisse), shown in Table B-4, is an exception to the trend of public sector plans to invest more like private sector plans. It has maintained its commitment to Quebec Government (and Hydro Quebec) bonds. However, even that fund has increased its share of investment in stocks by over 50 per cent.The investment share in corporate bonds and mortgages has decreased drastically. The individual funds (Table B-5), which are the pension funds of government employees are invested in a manner quite similar to private sector plans, however. They have followed the pattern of other public sector funds in that holdings of both government and corporate bonds, and mortgages have been declining since 1980, while the portion invested in stocks has increased by more than 80 per cent.

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[28] The general fund includes the assets of the Regie des Rentes du Quebec (QPP), the Regie de l'assurance automobile du Quebec (auto insurance) and the Fonds d'assurance-prets agricoles et forestiers (farmers and foresters insurance). As of December 31, 1985, the assets of the general fund stood at $15.5 billion, of which 56 per cent was invested in Quebec government and government guaranteed bonds. The special funds, with assets of $9.2 billion, had 38.5 per cent of assets invested in Quebec government and government guaranteed bonds.

Table B-3: ASSET DISTRIBUTION OF TRUSTEED PENSION PLANS OF FEDERAL CROWN CORPORATIONS

(per cent)

	Gov't Bonds	Other Bonds	Stocks	Mortgages	Real Estate	Other
1980	18.5	12.7	34.5	16.1	3.3	14.9
1981	21.8	10.7	36.2	14.3	3.8	13.3
1982	22.5	9.7	35.4	13.1	5.2	14.1
1983	27.7	10.1	34.3	11.1	5.8	11.0
1984	30.7	7.9	35.9	9.9	5.9	9.6

Sources:

Statistics Canada, National Income and Balance Sheet Accounts, 1986, Cat. 13-214

Statistics Canada, Trusteed Pension Plans Financial Statistics, various issues, Cat. 74-201.

Table B-4: ASSET DISTRIBUTION OF THE GENERAL FUND OF THE CAISSE DE DEPOT ET PLACEMENT DU QUEBEC

(per cent)

	Gov't Bonds	Other Bonds	Stocks	Mortgages	Real Estate	Other
1980	72.6	8.4	11.0	5.2	0.4	2.4
1981	70.7	6.5	13.2	4.9	0.6	4.1
1982	69.2	4.6	13.1	3.8	1.8	7.5
1983	70.7	2.9	14.1	4.2	2.3	5.8
1984	71.9	2.0	16.7	3.9	2.1	3.4
1985	68.1	2.1	17.4	3.4	1.6	7.4

Source:

Caisse de Depot et Placement du Quebec, Annual Report, 1980 - 1985.

Table B-5: ASSET DISTRIBUTION OF THE INDIVIDUAL FUNDS OF THE CAISSE DE DEPOT ET PLACEMENT DU QUEBEC
(per cent)

	Gov't Bonds	Other Bonds	Stocks	Mortgages	Real Estate	Other
1980	55.3	8.3	17.6	15.2	0.0	3.6
1981	51.3	6.4	24.8	14.8	0.0	2.7
1982	49.5	4.8	25.8	12.8	0.0	7.1
1983	52.7	2.9	30.7	11.1	0.0	2.6
1984	51.0	1.6	34.7	9.7	0.1	3.0
1985	46.6	1.1	32.0	9.7	1.2	9.4

Source:

Caisse de Depot et Placement du Quebec, Annual Report, 1980 - 1985.

Appendix CCASH FLOW PROJECTIONS FOR ONTARIO PUBLIC SECTOR PENSION FUNDS

The impact on the Canadian capital markets of changing the investment policies for the Teachers' Superannuation Fund (TSF), the Public Service Superannuation Fund (PSSF), the Superannuation Adjustment Fund (SAF) and the Canada Pension Plan (CPP) from the current policy of investing those funds in non-marketable securities to a policy of investing in marketable securities is examined in this study. An important consideration is the flow of investment funds into the capital markets that would result from such a policy change.

Projections of the funds that would be available for investment, the allocation of the flow of funds to different types of assets, and the resulting distribution of assets have been developed to provide an empirical context for the discussion. (See chapter 5 in particular.) The projection period is 1987 to 2010. This appendix describes the data, assumptions and methodology used in preparing the projections.

Section 1 describes the general approach as it applies to all four funds. Sections 2 through 5 add specific comments relevant to the projected investment flows from the TSF, PSSF, SAF, and CPP, respectively. Printouts of the input data and projection results for each plan appear in the relevant sections. In addition, aggregate projections are presented in section 6 for the three Ontario plans (TSF, PSSF and SAF) and for the three Ontario plans plus the CPP.

The projections included in this appendix are based on assumptions regarding future interest rates and inflation rates which correspond roughly to those used in recent actuarial analyses of the public sector plans. While the rates of inflation in the 1990's are almost certainly too low, the projection was used in order to maintain consistency with the actuarial projections.

C.1 General Approach

LOTUS spreadsheets were prepared for each of the four funds. The most recent available actuarial projections of contributions to the plans and benefits to be paid by the plans were used to project the net flows into or out of the plans. The Finance Policy Branch of the Ministry of Treasury and Economics provided schedules of interest payments and retirements of funds invested by the funds in non-marketable Ontario government securities as at January 1, 1987. The sum of the net contributions minus benefits and the interest and principal payments on pre-1987 non-marketable securities produce what is termed the "net cash flow" in the spreadsheets.

It is assumed that the 1987 net cash flow will be invested in non-marketable securities. Those funds are not reflected in the Treasury interest and retirements schedules; hence, the schedules have been augmented by adding the projected 1987 net cash flow to the non-marketable debt outstanding at the beginning of 1987. It is assumed that commencing in 1988 the net cash flow plus interest and retirements of the new 1987 non-marketable debt will be invested in marketable securities. Those funds, plus income earned on market investments make up the total new investable funds for 1988 through 2010. It is assumed that after 1987 all available funds are invested in marketable securities, but the pre-1988 investment in non-marketable Ontario debentures are not retired early. The principal value is rolled over into marketable securities at the scheduled retirement dates.

It also is assumed that the portfolio managers of the market investments of each plan allocate their investments so as to reduce the debt ratio from the current 100% to 45% of assets. The debt ratio takes into account both marketable and non-marketable debt. However, because some diversification of debt investment can be expected, a minimum debt share of new investment is assumed. The minimum is 100% in 1988 and 40% in 1989, the transition years, and 20% thereafter. The high rates in the first two years reflect the assumption that it will take a couple of years to develop the expertise and prepare investment criteria for investing in equities and other non-fixed income investments.

Funds that are not invested in debt are divided between equities and other investments so as to reach an objective equity ratio of 40%. Hence, once the target asset distribution has been achieved, 15% of assets are in the "other investments" category.

New marketable long-term debt earns an interest rate determined at the time funds are invested. The projected interest rates on new debt issues are shown in Table C-3; these are approximately the same as those used in the actuarial projections. The term of all debt is assumed to exceed the horizon of the projections; hence, interest is earned at a fixed rate until 2010, provided debt investment is not reduced. If new debt investment is negative, interest income is reduced in proportion to the reduction in principal. No consideration is given to changes in the capital value of debt instruments.

Equity investment earns both dividends and capital gains. Dividend income on equity investment is assumed to be 4% of the current market value and capital gains are earned at a rate equal to the inflation rate plus 3 percentage points. Other investments are assumed to earn income equal to a specified current yield on the current value of funds invested. Income (interest, dividends and capital gains) on newly invested funds in any year is assumed to be earned at half the relevant annual rate because the flows of investment are assumed to be uniform through the year.

The year end market value of the equity investment is the previous year's market value, plus the capital gains during the year, plus new equity investment during the year. The cumulative values for both types of debt investment are the previous years' values plus new investment. The total portfolio value equals the sum of non-marketable and marketable debt, the market value of equity, and the cumulative value of other investments.

The projections are made in current dollars but are converted to 1987 dollars for use in Tables 7 and 8 of the study. In the following sections, projections of the components of the flows to marketable securities and the allocation of new funds are reported in both nominal and real terms.

In the next four sections sources, assumptions and methodological considerations that are relevant to specific pension funds are presented. Except as noted, the calculations in sections 3 through 5 are the same as for the TSF.

This study treats the CPP as different from the three Ontario plans. Consequently, aggregate projections are provided for the three Ontario plans, exclusive of the CPP, as well as for the four plans together.

C.2 Teachers' Superannuation Fund (TSF)

1. Net contributions minus benefits (contributions of teachers, the province and other employers minus administrative expenses and benefit payments) for the years 1987 through 2010 correspond to the cash flow projections provided by the TSF's actuaries, Eckler Partners Ltd. They are shown in Table C-1. The projections are based on the data, methods and assumptions described in the actuaries' report dated March 18, 1987.
2. The interest, principal and principal retired data for pre-1987 CRF investments (non-market) in the years 1987 through 2010 (Table C-1) are based on the debt maturity and interest payment schedules provided by the Ministry of Treasury and Economics (T&E schedules) dated April 10, 1987.
3. The non-market principal outstanding at the end of 1986 for the TSF includes $560 million proceeds received by the province in early 1987 (as shown in the T&E schedules). That amount reflects funds received by the TSF in 1986; however, the reconciliation may be imperfect because the exact value of funds held by the TSF as of Dec. 31, 1986 not in Ontario government debentures is not available.
4. Principal, interest and retirements for new 1987 non-market investment are identified separately from the T&E schedules of pre-1987 non-market investment. See Table C-2.
5. For 1987, the net cash flow is assumed to be invested in non-marketable debentures at a 10.5% average interest rate. (The Financial Policy Branch of T&E reports that the interest rates set for the first five months of the year were: January 10.32%; February 10.11%; March 10.23%; April 10.15%; May 10.9%. The cash flow from the TSF is heavier in the earlier months of the year.) The term of the 1987 non-market debentures is assumed to be 20 years (the TSF is free to choose any term from 20 to 25 years). For purposes of calculating post-1986 non-market interest, it is assumed that the cash flow is distributed uniformly over the year; hence, interest in the first and last years is half the annual interest for funds invested in any year.
6. The rate of interest paid on TSF funds, when debentured, is calculated as "the weighted average yield to maturity on the three most recently issued long-term Ontario Hydro or Ontario government guaranteed securities outstanding in the Canadian secondary market having an original term to maturity of 20 years or more and remaining term of 18 years or more. The average is weighted by the value of securities outstanding and is measured as of the first three business days of the month." One-eighth of one per cent is added to the rate to reflect the Ontario government savings in administrative and issuing costs. The rate is calculated monthly and applied to funds debentured in that month. (Source: Finance Policy Branch of Treasury and Economics)
7. The projected investment data for the TSF are shown in Tables C-3 through C-5. Table C-3 shows projected debt investment. Table C-4 shows projected equity and other investment. Table C-5 shows the total new investable funds and the actual total portfolio value. The components of the total new investable funds, which are drawn from the previous tables, also are shown. The annual and 5-year average flows to marketable securities are summarized in Table C-6. Flows are shown in real (1987) dollars. Table C-7 shows the allocation of new funds, giving both flows and cumulative assets by investment type.
8. Most of the headings in the tables are self-explanatory. However, it should be noted that "Total Funds Available to Invest" (Table C-6) is the total of the first four columns in Table C-6. "Total New Investable Funds" in Table C-5 equals Total Funds Available to Invest plus the interest and dividends earned during the year on the investment of those new funds. The difference between Total New investable Funds in Tables C-5 and C-7 is that Table C-5 is in current dollars, whereas Table C-7 is in constant dollars. The same definitions apply in the corresponding tables for the PSSF, SAF, CPP and the totals.

Table C-1: Projected Cash Flow (Net Contributions and 1986 Assets) for the Teachers' Superannuation Fund, 1987-2010

(millions of current dollars)

Period ending on Dec. 31,	Contributions			Admin. Expense	Benefit Payments	Net Cont - Ben	Principal Retired	Non-market Principal Outstanding	Interest Payments	Net Cash Flow
	Teachers	Province	Other Empl.							
1987	$259	$287	$6	$4	$319	$229	$176	$9,853	$1,097	$1,502
1988	$269	$293	$6	$4	$377	$187	$0	$9,853	$1,109	$1,296
1989	$283	$299	$7	$4	$413	$172	$0	$9,853	$1,109	$1,281
1990	$301	$308	$7	$4	$429	$183	$0	$9,853	$1,109	$1,292
1991	$320	$328	$8	$4	$449	$203	$0	$9,853	$1,109	$1,312
1992	$340	$348	$8	$5	$475	$216	$455	$9,399	$1,109	$1,779
1993	$361	$370	$9	$5	$509	$226	$179	$9,220	$1,078	$1,483
1994	$382	$393	$9	$5	$554	$225	$16	$9,204	$1,066	$1,307
1995	$403	$416	$10	$6	$614	$209	$170	$9,034	$1,063	$1,442
1996	$425	$439	$10	$6	$691	$177	$120	$8,914	$1,046	$1,343
1997	$446	$463	$11	$6	$786	$128	$190	$8,724	$1,033	$1,351
1998	$468	$485	$11	$6	$902	$56	$201	$8,524	$1,019	$1,275
1999	$490	$509	$12	$7	$1,039	($35)	$723	$7,801	$983	$1,671
2000	$512	$533	$12	$7	$1,196	($146)	$672	$7,130	$912	$1,438
2001	$534	$557	$13	$7	$1,371	($274)	$429	$6,701	$849	$1,004
2002	$557	$581	$13	$8	$1,570	($427)	$344	$6,357	$809	$725
2003	$580	$606	$14	$8	$1,792	($600)	$891	$5,466	$712	$1,003
2004	$604	$631	$14	$9	$2,038	($798)	$911	$4,555	$606	$719
2005	$628	$657	$15	$9	$2,305	($1,014)	$1,060	$3,495	$451	$497
2006	$654	$683	$16	$9	$2,584	($1,240)	$1,175	$2,320	$344	$279
2007	$682	$712	$16	$10	$2,864	($1,464)	$784	$1,536	$267	($413)
2008	$713	$742	$17	$10	$3,138	($1,676)	$446	$1,090	$121	($1,109)
2009	$747	$776	$18	$11	$3,402	($1,872)	$530	$560	$58	($1,284)
2010	$784	$813	$19	$11	$3,650	($2,045)	$560	$0	$29	($1,456)

Table C-2: Projected Cash Flow (Post-1986 Non-market Investment) for the Teachers' Superannuation Fund, 1987-2010
(millions of current dollars)

Period ending on Dec. 31,	Post-1986 Non-mkt Investment	Post-1986 Non-mkt Retired	Cumulative Post-1986 Non-mkt	Non-mkt Rate	Post-1986 Non-mkt Interest	Post-1986 Net Cash Flow
1987	$1,502		$1,502	10.50%	$79	($1,423)
1988			$1,502		$158	$158
1989			$1,502		$158	$158
1990			$1,502		$158	$158
1991			$1,502		$158	$158
1992			$1,502		$158	$158
1993			$1,502		$158	$158
1994			$1,502		$158	$158
1995			$1,502		$158	$158
1996			$1,502		$158	$158
1997			$1,502		$158	$158
1998			$1,502		$158	$158
1999			$1,502		$158	$158
2000			$1,502		$158	$158
2001			$1,502		$158	$158
2002			$1,502		$158	$158
2003			$1,502		$158	$158
2004			$1,502		$158	$158
2005			$1,502		$158	$158
2006			$1,502		$158	$158
2007		$1,502	$0		$79	$1,581
2008-10		$0	$0		$0	$0

Table C-3: Projected Debt Investment for the Teachers' Superannuation Fund, 1987-2010
(millions of current dollars)

Period ending on Dec. 31,	Objective Debt Value	New Debt Investm't	Min. Debt Share on New Investm't	Return on New L.T. Debt(%)	New Debt Interest Income	Cumulative New Debt Investm't
1987	$5,110	$0		9.0	$0	$0
1988	$5,828	$1,596	1.00	8.0	$64	$1,596
1989	$6,565	$645	0.40	7.0	$150	$2,240
1990	$7,374	$342	0.20	6.75	$184	$2,583
1991	$8,266	$365	0.20	6.5	$208	$2,948
1992	$9,260	$481	0.20	6.5	$235	$3,429
1993	$10,358	$448	0.20	6.5	$265	$3,877
1994	$11,559	$438	0.20	6.5	$294	$4,316
1995	$12,873	$493	0.20	6.5	$325	$4,808
1996	$14,292	$505	0.20	6.5	$357	$5,314
1997	$15,813	$545	0.20	6.5	$391	$5,859
1998	$17,429	$1,545	0.20	6.5	$459	$7,404
1999	$19,137	$2,430	0.20	6.5	$588	$9,834
2000	$20,924	$2,459	0.20	6.5	$747	$12,293
2001	$22,789	$2,294	0.20	6.5	$902	$14,587
2002	$24,733	$2,287	0.20	6.5	$1,050	$16,874
2003	$26,733	$2,891	0.20	6.5	$1,219	$19,765
2004	$28,786	$2,964	0.20	6.5	$1,409	$22,729
2005	$30,869	$3,143	0.20	6.5	$1,608	$25,872
2006	$33,005	$3,311	0.20	6.5	$1,817	$29,183
2007	$35,195	$4,477	0.20	6.5	$2,070	$33,659
2008	$37,408	$2,658	0.20	6.5	$2,302	$36,318
2009	$39,700	$2,822	0.20	6.5	$2,480	$39,140
2010	$42,108	$2,967	0.20	6.5	$2,669	$42,108

Table C-4: Projected Equity and Other Investment for the Teachers' Superannuation Fund, 1987-2010

(millions of current dollars)

Period ending on Dec. 31,	New Equity Investm't	Capital Gains	Dividend Income	Market Value at Year End	Equity Ratio	New Other Investm't	Yield on Other Investm't	Income on Other Investm't	Cumul. Other Investm't
1987	$0	$0	$0	$0	0.00	$0	7.0%	$0	$0
1988	$0	$0	$0	$0	0.00	$0	7.0%	$0	$0
1989	$773	$26	$16	$799	0.05	$193	7.0%	$7	$193
1990	$1,096	$86	$56	$1,981	0.12	$274	7.0%	$23	$467
1991	$1,168	$157	$106	$3,306	0.18	$292	7.0%	$43	$759
1992	$1,540	$257	$168	$5,104	0.25	$385	7.0%	$67	$1,145
1993	$1,433	$378	$240	$6,915	0.30	$358	7.0%	$93	$1,503
1994	$1,402	$495	$315	$8,813	0.34	$351	7.0%	$117	$1,853
1995	$1,577	$624	$397	$11,014	0.39	$394	7.0%	$144	$2,248
1996	$975	$748	$475	$12,736	0.40	$1,047	7.0%	$194	$3,295
1997	$492	$844	$536	$14,072	0.40	$1,688	7.0%	$290	$4,983
1998	$506	$931	$592	$15,509	0.40	$810	7.0%	$377	$5,793
1999	$493	$1,024	$651	$17,026	0.40	$570	7.0%	$425	$6,363
2000	$466	$1,122	$713	$18,614	0.40	$597	7.0%	$466	$6,960
2001	$433	$1,224	$778	$20,271	0.40	$623	7.0%	$509	$7,582
2002	$396	$1,330	$845	$21,998	0.40	$649	7.0%	$553	$8,231
2003	$335	$1,441	$915	$23,773	0.40	$669	7.0%	$600	$8,900
2004	$269	$1,554	$987	$25,596	0.40	$687	7.0%	$647	$9,587
2005	$179	$1,670	$1,061	$27,445	0.40	$697	7.0%	$695	$10,284
2006	$109	$1,787	$1,136	$29,341	0.40	$714	7.0%	$745	$10,998
2007	$37	$1,908	$1,213	$31,286	0.40	$733	7.0%	$796	$11,731
2008	($68)	$2,031	$1,291	$33,249	0.40	$741	7.0%	$847	$12,472
2009	($121)	$2,157	$1,371	$35,285	0.40	$766	7.0%	$900	$13,237
2010	($150)	$2,289	$1,454	$37,424	0.40	$803	7.0%	$955	$14,041

Table C-5: Total Investable Funds and Total Portfolio Valuefor the Teachers' Superannuation Fund, 1987-2010

(millions of current dollars)

Period ending on Dec. 31,	Net Cash Flow	Post-1986 Net Cash Flow	New Debt Interest Income	Dividend Income	Income on Other Investm't	Total New Investable Funds	Act. Total Portfolio Value
1987	$1,502	($1,423)	$0	$0	$0	$0	$11,355
1988	$1,296	$158	$64	$0	$0	$1,596	$12,951
1989	$1,281	$158	$150	$16	$7	$1,611	$14,588
1990	$1,292	$158	$184	$56	$23	$1,712	$16,387
1991	$1,312	$158	$208	$106	$43	$1,826	$18,369
1992	$1,779	$158	$235	$168	$67	$2,407	$20,578
1993	$1,483	$158	$265	$240	$93	$2,239	$23,017
1994	$1,307	$158	$294	$315	$117	$2,191	$25,687
1995	$1,442	$158	$325	$397	$144	$2,464	$28,606
1996	$1,343	$158	$357	$475	$194	$2,527	$31,760
1997	$1,351	$158	$391	$536	$290	$2,726	$35,140
1998	$1,275	$158	$459	$592	$377	$2,861	$38,732
1999	$1,671	$158	$588	$651	$425	$3,493	$42,526
2000	$1,438	$158	$747	$713	$466	$3,522	$46,498
2001	$1,004	$158	$902	$778	$509	$3,350	$50,643
2002	$725	$158	$1,050	$845	$553	$3,332	$54,962
2003	$1,003	$158	$1,219	$915	$600	$3,894	$59,406
2004	$719	$158	$1,409	$987	$647	$3,920	$63,969
2005	$497	$158	$1,608	$1,061	$695	$4,019	$68,597
2006	$279	$158	$1,817	$1,136	$745	$4,134	$73,344
2007	($413)	$1,581	$2,070	$1,213	$796	$5,246	$78,212
2008	($1,109)	$0	$2,302	$1,291	$847	$3,331	$83,129
2009	($1,284)	$0	$2,480	$1,371	$900	$3,467	$88,223
2010	($1,456)	$0	$2,669	$1,454	$955	$3,621	$93,573

Table C-6: Projected Flow of New Funds into Marketable Securities for the Teachers' Superannuation Fund, 1987-2010

(millions of 1987 dollars)

Period Ending Dec. 31,	Actuarial Projections Cont - Ben	Int. Income Non-market Debt	Principal Repayments Non-mkt Debt	Interest & Dividends Post-1987	Total Funds Available To Invest
1986	$0	$0	$0	$0	$0
1987	$0	$0	$0	$0	$0
1988	$180	$1,141	$0	$0	$1,320
1989	$159	$1,173	$0	$59	$1,391
1990	$164	$1,134	$0	$155	$1,453
1991	$176	$1,100	$0	$229	$1,505
1992	$182	$1,065	$382	$300	$1,929
1993	$184	$1,004	$145	$382	$1,716
1994	$177	$961	$13	$470	$1,620
1995	$159	$926	$129	$551	$1,764
1996	$130	$883	$88	$634	$1,734
1997	$91	$844	$135	$727	$1,795
1998	$38	$805	$137	$833	$1,813
1999	($23)	$754	$478	$944	$2,153
2000	($93)	$683	$429	$1,063	$2,082
2001	($169)	$621	$265	$1,189	$1,906
2002	($255)	$576	$205	$1,305	$1,831
2003	($346)	$501	$513	$1,411	$2,080
2004	($444)	$425	$507	$1,522	$2,010
2005	($545)	$328	$570	$1,637	$1,989
2006	($644)	$261	$611	$1,748	$1,975
2007	($735)	$213	$1,148	$1,857	$2,482
2008	($813)	$97	$216	$1,979	$1,479
2009	($877)	$27	$248	$2,081	$1,479
2010	($926)	$13	$254	$2,152	$1,492
Five-year Averages					
1988-90	$168	$1,149	$0	$71	$1,388
1991-95	$175	$1,011	$134	$386	$1,707
1996-00	$28	$794	$253	$840	$1,916
2001-05	($352)	$490	$412	$1,413	$1,963
2006-10	($799)	$122	$495	$1,963	$1,781

Table C-7: Allocation of New Funds Invested in Marketable Securities for the Teachers' Superannuation Fund,1987-2010

(millions of 1987 dollars)

Period Ending Dec. 31,	Total New Investable Funds	New Debt Investm't	New Equity Investm't	New Other Investm't	Non-market Principal Outstand'g	Cumulative New Debt Investm't	Equity Mkt Value at Year End	Cumul. Other Investm't	Act. Total Portfolio Value
1987	$0	$0	$0	$0	$11,355	$0	$0	$0	$11,355
1988	$1,533	$1,533	$0	$0	$10,908	$1,533	$0	$0	$12,441
1989	$1,493	$597	$716	$179	$10,519	$2,075	$740	$179	$13,514
1990	$1,534	$307	$982	$245	$10,173	$2,314	$1,775	$419	$14,681
1991	$1,586	$317	$1,015	$254	$9,867	$2,562	$2,873	$660	$15,962
1992	$2,025	$405	$1,296	$324	$9,169	$2,885	$4,293	$963	$17,310
1993	$1,820	$364	$1,165	$291	$8,714	$3,151	$5,620	$1,221	$18,707
1994	$1,721	$344	$1,101	$275	$8,407	$3,389	$6,920	$1,455	$20,171
1995	$1,869	$374	$1,196	$299	$7,994	$3,648	$8,356	$1,705	$21,703
1996	$1,852	$370	$715	$767	$7,635	$3,895	$9,336	$2,415	$23,282
1997	$1,931	$386	$349	$1,196	$7,243	$4,150	$9,967	$3,529	$24,888
1998	$1,958	$1,057	$346	$554	$6,861	$5,066	$10,613	$3,964	$26,504
1999	$2,309	$1,607	$326	$377	$6,151	$6,502	$11,257	$4,207	$28,117
2000	$2,250	$1,571	$298	$381	$5,514	$7,853	$11,891	$4,446	$29,703
2001	$2,068	$1,416	$267	$384	$5,063	$9,003	$12,511	$4,680	$31,257
2002	$1,987	$1,364	$236	$387	$4,687	$10,062	$13,118	$4,909	$32,776
2003	$2,244	$1,666	$193	$385	$4,015	$11,388	$13,697	$5,128	$34,228
2004	$2,182	$1,650	$150	$382	$3,372	$12,653	$14,249	$5,337	$35,610
2005	$2,162	$1,690	$96	$375	$2,688	$13,915	$14,761	$5,531	$36,895
2006	$2,148	$1,721	$57	$371	$1,986	$15,165	$15,248	$5,715	$38,114
2007	$2,634	$2,248	$18	$368	$771	$16,900	$15,709	$5,890	$39,270
2008	$1,616	$1,290	($33)	$359	$529	$17,618	$16,130	$6,050	$40,327
2009	$1,625	$1,323	($57)	$359	$262	$18,345	$16,539	$6,205	$41,351
2010	$1,640	$1,344	($68)	$364	$0	$19,069	$16,948	$6,359	$42,375

Five-year Average Flows					Five-year Period End Asset Values					
1988-90	$1,520	$812	$566	$142	1990	$10,173	$2,314	$1,775	$419	$14,681
1991-95	$1,804	$361	$1,155	$289	1995	$7,994	$3,648	$8.356	$1,705	$21,703
1996-00	$2,060	$998	$407	$655	2000	$5,514	$7,853	$11,891	$4,446	$29,703
2001-05	$2,128	$1,557	$188	$383	2005	$2,688	$13,915	$14,761	$5,531	$36,895
2006-10	$1,933	$1,585	($17)	$364	2010	$0	$19,069	$16,948	$6,359	$42,375

C.3 Public Service Superannuation Fund (PSSF)

1. Net contributions minus benefits (that is, contributions for active and new employees and benefit payments for current pensioners, currently active employees and new employees) for the years 1987 through 2010 correspond to the cash flow projections contained in Actuarial Report prepared by Actuarial Services in the Human Resource Secretariat of Management Board of Cabinet, dated December 15, 1986. The projections appear in page 35 (Appendix 9(e)) of that report and are reproduced in Table C-8 below.
2. The interest, principal and principal retired data for pre-1987 CRF investments (non-market) in the years 1987 through 2010 are based on the debt maturity and interest payment schedules provided by the T & E schedules dated April 10, 1987.
3. For 1987, the net cash flow is assumed to be invested in non-marketable debentures at a 10.5% average interest rate, the same rate as was used for the TSF. The interest rate for PSSF non-marketable Ontario government debentures is based on the same formula as is the rate for TSF funds. However, the PSSF rate is calculated on an annual basis as the simple average of the 12 monthly rates. For the fiscal year April 1, 1986 to March 31, 1987 the PSSF rate was 10.38%. The rate for fiscal 1987/88 will not be determined until March 1988 since PSSF funds are debentured annually at the end of the fiscal year. See Table C-9.
4. The projected investment data for the PSSF are shown in Tables C-10 through C-12. Table C-10 shows projected debt investment. Table C-11 shows projected equity and other investment. Table C-12 shows the total new investable funds and the actual total portfolio value. The components of the total new investable funds, which are drawn from previous tables, also are shown. The annual and 5-year average flows to marketable securities are summarized in Table C-13. Both nominal and real (1987 dollars) flows are shown. Table C-14 shows the allocation of new funds, giving both flows and cumulative assets by investment type.

Table C-8: Projected Cash Flow (Net Contributions and 1986 Assets) for the Public Service Superannuation Fund, 1987-2010

(millions of current dollars)

Period ending on	Active Employees end of 1985		New Employees 1986-2010 inclusive		Pensioners End of 1985	Net	Principal	Non-market Principal	Interest	Net Cash
Dec. 31,	Contrib's	Benefits	Contrib's	Benefits	Benefits	Cont - Ben	Retired	Outstand'g	Payments	Flow
1987	$203	$54	$20	$2	$142	$25	$20	$4,010	$456	$500
1988	$204	$76	$33	$3	$138	$20	$22	$3,988	$454	$497
1989	$207	$98	$47	$4	$135	$17	$24	$3,965	$453	$493
1990	$210	$121	$61	$6	$131	$14	$25	$3,940	$452	$490
1991	$210	$145	$77	$8	$127	$8	$29	$3,912	$450	$487
1992	$210	$170	$94	$10	$124	$0	$29	$3,883	$449	$477
1993	$208	$196	$111	$13	$120	($9)	$36	$3,848	$447	$473
1994	$206	$222	$129	$16	$116	($19)	$40	$3,808	$445	$466
1995	$203	$244	$147	$19	$112	($26)	$43	$3,765	$442	$459
1996	$201	$269	$166	$21	$108	($32)	$63	$3,702	$440	$471
1997	$197	$296	$186	$24	$104	($40)	$74	$3,628	$436	$471
1998	$194	$326	$208	$26	$100	($50)	$88	$3,540	$432	$469
1999	$189	$360	$231	$29	$95	($65)	$93	$3,447	$424	$452
2000	$184	$397	$255	$33	$91	($82)	$112	$3,336	$417	$446
2001	$179	$439	$280	$38	$86	($103)	$150	$3,186	$405	$452
2002	$172	$485	$308	$43	$81	($130)	$190	$2,996	$390	$450
2003	$164	$537	$337	$49	$76	($161)	$198	$2,798	$372	$409
2004	$156	$591	$368	$56	$72	($195)	$237	$2,561	$353	$394
2005	$146	$649	$400	$64	$67	($233)	$254	$2,308	$330	$350
2006	$136	$712	$435	$74	$62	($277)	$278	$2,029	$302	$303
2007	$126	$773	$471	$86	$57	($319)	$322	$1,707	$264	$267
2008	$115	$833	$509	$100	$52	($361)	$390	$1,317	$215	$244
2009	$104	$896	$548	$117	$47	($408)	$404	$913	$165	$161
2010	$92	$958	$590	$137	$43	($455)	$419	$495	$113	$77

Table C-9: Projected Cash Flow (Post-1986 Non-market Investment) for the Public Service Superannuation Fund, 1987-2010

(millions of current dollars)

Period ending on Dec. 31,	Post-1986 Non-mkt Investm't	Post-1986 Non-mkt Retired	Cumulative Post-1986 Non-mkt	Non-mkt Rate	Post-1986 Non-mkt Interest	Post-1986 Net Cash Flow
1987	$500		$500	10.50%	$26	($474)
1988			$500		$53	$53
1989			$500		$53	$53
1990			$500		$53	$53
1991			$500		$53	$53
1992			$500		$53	$53
1993			$500		$53	$53
1994			$500		$53	$53
1995			$500		$53	$53
1996			$500		$53	$53
1997			$500		$53	$53
1998			$500		$53	$53
1999			$500		$53	$53
2000			$500		$53	$53
2001			$500		$53	$53
2002			$500		$53	$53
2003			$500		$53	$53
2004			$500		$53	$53
2005			$500		$53	$53
2006			$500		$53	$53
2007		$500	$0		$26	$527
2008		$0	$0		$0	$0
2009		$0	$0		$0	$0
2010		$0	$0		$0	$0

Table C-10: Projected Debt Investment for the Public Service Superannuation Fund, 1987-2010

(millions of current dollars)

Period ending on Dec. 31,	Objective Debt Value	New Debt Investm't	Min. Debt Share on New Investm't	Return on New L.T. Debt	New Debt Interest Income	Cumulative New Debt Investment
1987	$2,030	$0		9.00%	$0	$0
1988	$2,290	$599	1.00	8.00%	$24	$599
1989	$2,558	$244	0.40	7.00%	$56	$844
1990	$2,851	$128	0.20	6.75%	$69	$972
1991	$3,167	$135	0.20	6.50%	$78	$1,107
1992	$3,511	$140	0.20	6.50%	$87	$1,247
1993	$3,886	$147	0.20	6.50%	$96	$1,394
1994	$4,292	$155	0.20	6.50%	$106	$1,549
1995	$4,736	$163	0.20	6.50%	$116	$1,712
1996	$5,221	$175	0.20	6.50%	$127	$1,887
1997	$5,748	$188	0.20	6.50%	$139	$2,075
1998	$6,317	$202	0.20	6.50%	$152	$2,277
1999	$6,926	$700	0.20	6.50%	$181	$2,978
2000	$7,578	$764	0.20	6.50%	$229	$3,741
2001	$8,274	$846	0.20	6.50%	$281	$4,587
2002	$9,014	$930	0.20	6.50%	$339	$5,517
2003	$9,799	$983	0.20	6.50%	$401	$6,501
2004	$10,632	$1,070	0.20	6.50%	$468	$7,570
2005	$11,514	$1,136	0.20	6.50%	$540	$8,706
2006	$12,446	$1,209	0.20	6.50%	$616	$9,916
2007	$13,422	$1,799	0.20	6.50%	$714	$11,715
2008	$14,445	$1,412	0.20	6.50%	$818	$13,127
2009	$15,520	$1,479	0.20	6.50%	$912	$14,607
2010	$16,652	$1,551	0.20	6.50%	$1,010	$16,157

Table C-11: Projected Equity and Other Investment for the Public Service Superannuation Fund, 1987-2010

(millions of current dollars)

Period ending on Dec. 31,	New Equity Investm't	Capital Gains	Dividend Income	Market Value at Yearend	Equity Ratio	New Other Investm't	Yield on Other Investm't	Income on Other Investm't	Cumulative Other Investm't
1987	$0	$0	$0	$0	0.00	$0	7.00%	$0	$0
1988	$0	$0	$0	$0	0.00	$0	7.00%	$0	$0
1989	$293	$10	$6	$303	0.05	$73	7.00%	$3	$73
1990	$410	$33	$21	$746	0.12	$103	7.00%	$9	$176
1991	$431	$59	$40	$1,236	0.18	$108	7.00%	$16	$284
1992	$448	$92	$60	$1,776	0.23	$112	7.00%	$24	$396
1993	$472	$131	$83	$2,378	0.28	$118	7.00%	$32	$514
1994	$495	$171	$108	$3,044	0.32	$124	7.00%	$40	$637
1995	$521	$215	$136	$3,780	0.36	$130	7.00%	$49	$768
1996	$561	$264	$168	$4,605	0.40	$140	7.00%	$59	$908
1997	$205	$306	$194	$5,116	0.40	$546	7.00%	$83	$1,454
1998	$166	$338	$215	$5,620	0.40	$644	7.00%	$124	$2,098
1999	$171	$371	$236	$6,162	0.40	$205	7.00%	$154	$2,303
2000	$174	$406	$258	$6,742	0.40	$217	7.00%	$169	$2,520
2001	$175	$444	$282	$7,360	0.40	$232	7.00%	$185	$2,752
2002	$174	$484	$308	$8,018	0.40	$247	7.00%	$201	$2,999
2003	$171	$527	$335	$8,716	0.40	$262	7.00%	$219	$3,261
2004	$168	$572	$363	$9,456	0.40	$278	7.00%	$238	$3,539
2005	$164	$620	$394	$10,240	0.40	$294	7.00%	$258	$3,833
2006	$157	$671	$426	$11,068	0.40	$311	7.00%	$279	$4,143
2007	$144	$724	$460	$11,936	0.40	$326	7.00%	$301	$4,469
2008	$128	$780	$496	$12,844	0.40	$341	7.00%	$325	$4,811
2009	$117	$839	$533	$13,799	0.40	$359	7.00%	$349	$5,170
2010	$106	$900	$572	$14,805	0.40	$378	7.00%	$375	$5,547

Table C-12: Total Investable Funds and Total Portfolio Value for the Public Service Superannuation Fund, 1987-2010
(millions of current dollars)

Period ending on Dec. 31,	Net Cash Flow	Post-1986 Net Cash Flow	New Debt Interest Income	Dividend Income	Income on Other Investm't	Total New Investable Funds	Act. Total Portfolio Value
1987	$500	($474)	$0	$0	$0	$0	$4,511
1988	$497	$53	$24	$0	$0	$599	$5,088
1989	$493	$53	$56	$6	$3	$611	$5,686
1990	$490	$53	$69	$21	$9	$641	$6,335
1991	$487	$53	$78	$40	$16	$673	$7,038
1992	$477	$53	$87	$60	$24	$701	$7,802
1993	$473	$53	$96	$83	$32	$737	$8,635
1994	$466	$53	$106	$108	$40	$773	$9,538
1995	$459	$53	$116	$136	$49	$814	$10,525
1996	$471	$53	$127	$168	$59	$877	$11,603
1997	$471	$53	$139	$194	$83	$940	$12,774
1998	$469	$53	$152	$215	$124	$1,012	$14,037
1999	$452	$53	$181	$236	$154	$1,076	$15,391
2000	$446	$53	$229	$258	$169	$1,154	$16,840
2001	$452	$53	$281	$282	$185	$1,253	$18,386
2002	$450	$53	$339	$308	$201	$1,351	$20,031
2003	$409	$53	$401	$335	$219	$1,416	$21,776
2004	$394	$53	$468	$363	$238	$1,516	$23,627
2005	$350	$53	$540	$394	$258	$1,594	$25,588
2006	$303	$53	$616	$426	$279	$1,677	$27,657
2007	$267	$527	$714	$460	$301	$2,269	$29,827
2008	$244	$0	$818	$496	$325	$1,882	$32,099
2009	$161	$0	$912	$533	$349	$1,955	$34,489
2010	$77	$0	$1,010	$572	$375	$2,034	$37,004

Table C-13: Projected Flow of New Funds into Marketable Securities for the Public Service Superannuation Fund, 1987-2010

(millions of 1987 dollars)

Period Ending Dec. 31,	Actuarial Projections Cont - Ben	Int. Income Non-mkt Debt	Principal Repayments Non-mkt Debt	Interest & Dividends Post-1987	Total Funds Available To Invest
1986	$0	$0	$0	$0	$0
1987	$0	$0	$0	$0	$0
1988	$19	$462	$21	$0	$502
1989	$15	$468	$22	$22	$528
1990	$12	$452	$22	$58	$544
1991	$7	$437	$25	$86	$555
1992	$0	$422	$24	$113	$558
1993	($8)	$406	$29	$139	$566
1994	($15)	$390	$31	$166	$573
1995	($19)	$375	$32	$193	$582
1996	($23)	$361	$46	$221	$605
1997	($28)	$346	$53	$251	$621
1998	($34)	$331	$60	$285	$642
1999	($43)	$315	$61	$325	$658
2000	($52)	$300	$71	$365	$683
2001	($64)	$283	$93	$405	$716
2002	($77)	$264	$113	$446	$746
2003	($93)	$244	$114	$488	$754
2004	($109)	$226	$132	$532	$780
2005	($125)	$206	$137	$575	$792
2006	($144)	$184	$145	$619	$804
2007	($160)	$159	$413	$663	$1,075
2008	($175)	$117	$189	$716	$846
2009	($191)	$77	$189	$768	$843
2010	($206)	$51	$190	$812	$847
			Five-year Averages		
1988-90	$16	$461	$22	$27	$525
1991-95	($7)	$406	$28	$139	$567
1996-00	($36)	$331	$58	$289	$642
2001-05	($94)	$244	$118	$489	$758
2006-10	($175)	$118	$225	$716	$883

Table C-14: Allocation of New Funds to Invested in Marketable Securities for the Public Service Superannuation Fund, 1987-2010

(millions of 1987 dollars)

Period Ending Dec. 31,	Total New Investable Funds	New Debt Investm't	New Equity Investm't	New Other Investm't	Non-mkt Principal Outstanding	Cumulative New Debt Investm't	Equity Mkt Value at Yearend	Cumulative Other Investment	Act. Total Portfolio Value
1987	$0	$0	$0	$0	$4,511	$0	$0	$0	$4,511
1988	$576	$576	$0	$0	$4,312	$576	$0	$0	$4,888
1989	$566	$226	$272	$68	$4,136	$782	$281	$68	$5,267
1990	$575	$115	$368	$92	$3,979	$871	$668	$158	$5,675
1991	$585	$117	$374	$94	$3,834	$962	$1,074	$246	$6,116
1992	$589	$118	$377	$94	$3,688	$1,049	$1,494	$333	$6,563
1993	$599	$120	$383	$96	$3,534	$1,133	$1,933	$417	$7,018
1994	$607	$121	$388	$97	$3,383	$1,216	$2,390	$500	$7,490
1995	$618	$124	$395	$99	$3,237	$1,299	$2,868	$582	$7,985
1996	$643	$129	$412	$103	$3,081	$1,383	$3,376	$666	$8,505
1997	$666	$133	$145	$387	$2,924	$1,470	$3,624	$1,030	$9,047
1998	$693	$139	$114	$441	$2,765	$1,558	$3,846	$1,436	$9,605
1999	$711	$463	$113	$135	$2,610	$1,969	$4,074	$1,523	$10,176
2000	$737	$488	$111	$139	$2,451	$2,390	$4,307	$1,610	$10,757
2001	$773	$522	$108	$143	$2,275	$2,831	$4,543	$1,699	$11,348
2002	$805	$554	$104	$147	$2,085	$3,290	$4,781	$1,788	$11,945
2003	$816	$567	$99	$151	$1,900	$3,745	$5,022	$1,879	$12,546
2004	$844	$595	$94	$155	$1,705	$4,214	$5,264	$1,970	$13,153
2005	$858	$611	$88	$158	$1,510	$4,683	$5,508	$2,062	$13,763
2006	$871	$628	$81	$161	$1,315	$5,153	$5,752	$2,153	$14,372
2007	$1,139	$903	$72	$164	$857	$5,882	$5,993	$2,244	$14,976
2008	$913	$685	$62	$166	$639	$6,368	$6,231	$2,334	$15,572
2009	$916	$693	$55	$168	$428	$6,846	$6,468	$2,423	$16,165
2010	$921	$702	$48	$171	$224	$7,317	$6,705	$2,512	$16,758

Five-year Average Flows

1988-90	$572	$306	$213	$53
1991-95	$600	$120	$384	$96
1996-00	$690	$270	$179	$241
2001-05	$819	$570	$98	$151
2006-10	$952	$723	$64	$166

Five-year Period End Asset Values

1990	$3,979	$871	$668	$158	$5,675
1995	$3,237	$1,299	$2,868	$582	$7,985
2000	$2,451	$2,390	$4,307	$1,610	$10,757
2005	$1,510	$4,683	$5,508	$2,062	$13,763
2010	$224	$7,317	$6,705	$2,512	$16,758

C.4 The Superannuation Adjustment Fund (SAF)

1. Net contributions minus benefits (that is, contributions for active and new employees and benefit payments for current pensioners, currently active employees and new employees) for the years 1987 through 2010 correspond to the cash flow projections contained in actuarial reports prepared by Actuarial Services in the Human Resource Secretariatof Management Board of Cabinet for meetings dated February 10, 1987 (Teachers' Superannuation Fund portion), March 3. 1987 (Public Service Superannuation Plan portion), and March 5, 1987 (Ryerson Pension Plan portion). The projections based on 0% membership growth, variable escalation rate, and a 1% contribution rate was used. See Table C-15.

2. The interest, principal and principal retired data for pre-1987 CRF investments (non-market) in the years 1987 through 2010 are based on the debt maturity and interest payment schedules provided by the Ministry of Treasury and Economics (T&E schedules) dated April 10, 1987. (Table C-15)

3. A different formula is used for determining the interest rate for the SAF than is used for the TSF and PSSF. "The SAF rates are based on secondary market yields of either Ontario Hydro or federal government bonds in the Canadian capital markets measured over the first three business days of the month." All outstanding issues are used by a Treasury model which calculates for 1, 2, 3, 4, 5, 7, 10, 15, and 20 year terms. A premium of one-eighth of one percent is add for transaction costs saved by the government. If a yield spread is added to federal bond issues used by the model to reflect differences between the federal and Ontario Hydro rates. (Source: Finance Policy Branch of Treasury and Economics) Each group within the SAF chooses the term it prefers after Treasury has determined the rates for each term. For fiscal 1986-87, the PSSF chose a ten year term earning 9.28%, the TSF chose a 15 year term earning 9.54% and the Ryerson Plan chose a 20 year term earning 9.64%. Rates for the 1987-88 fiscal year will not be determined until the March 1988. For 1987, the net cash flow is assumed to be invested in non-marketable debentures at a 10.5% average interest rate. The projections in Table C-16 are based on calendar rather than fiscal years, which is consistent with the actuarial projections and the Treasury debt retirement schedules.

4. The SAF cash flow projections require several special adaptations to handle the fact that for the SAF total new investable funds fall below zero. That implies that there is a net withdrawal of funds because the income generated by the fund is not sufficient to cover the cash flow deficit from net contributions minus benefits even when supplemented by the income and retirements of non-marketable assets. Note that although benefits exceed contributions for the TSF after 1998 and for the PSSF after 1992, the income generated by both funds is sufficient to offset the shortfall and maintain growth in the total value of the assets. The rules for withdrawals are designed to maintain the debt and equity ratios as close to their objective levels (45% and 40%, respectively) as possible until the portfolio value falls to zero. When the total fund falls into a deficit position, the equity, debt and other investment portfolios values are zero. A separate deficit account is maintained and interest is assumed to be paid on the deficit value at a rate that equals the market bond rate.

5. The projected investment data for the SAF are shown in Tables C-17 through C-19. Table C-17 shows projected debt investment. Table C-18 shows projected equity and other investment. Table C-19 shows the total new investable funds and the actual total portfolio value. The components of the total new investable funds, which are drawn from the previous tables, also are shown. The annual and 5-year average flows to marketable securities are summarized in Table C-20. Both nominal and real (1987 dollars) flows are shown. Table C-21 shows the allocation of new funds, giving both flows and cumulative assets by investment type.

Table C-15: Projected Cash Flow (Net Contributions and 1986 Assets) for the Superannuation Adjustment Fund, 1987-2010

(millions of current dollars)

Period	Net Cash Flow of Superann. Plans (excl. inv. inc.)				Non-mkt			Net
ending on Dec. 31,	Public Service	Teachers	Ryerson	Net Cont - Ben	Principal Retired	Principal Outstanding	Interest Payments	Cash Flow
1987	($2)	$40	$0.74	$39	$0	$1,300	$165	$205
1988	($8)	$36	$0.73	$28	$0	$1,300	$165	$194
1989	($16)	$27	$0.71	$12	$28	$1,272	$165	$206
1990	($28)	$13	$0.67	($14)	$0	$1,272	$162	$148
1991	($40)	($3)	$0.60	($43)	$21	$1,251	$162	$140
1992	($52)	($21)	$0.52	($73)	$102	$1,149	$160	$189
1993	($65)	($41)	$0.40	($105)	$83	$1,066	$148	$126
1994	($77)	($60)	$0.25	($137)	$105	$961	$140	$108
1995	($87)	($80)	$0.03	($167)	$141	$820	$128	$103
1996	($98)	($104)	($0.22)	($202)	$87	$733	$112	($3)
1997	($109)	($132)	($0.59)	($242)	$165	$568	$101	$25
1998	($122)	($165)	($1.00)	($288)	$154	$414	$73	($61)
1999	($135)	($204)	($1.55)	($341)	$121	$293	$51	($169)
2000	($150)	($249)	($2.21)	($401)	$138	$155	$35	($227)
2001	($165)	($299)	($3.09)	($468)	$149	$6	$17	($302)
2002	($182)	($358)	($4.15)	($544)	$1	$5	$1	($542)
2003	($200)	($424)	($5.42)	($629)	$1	$4	$1	($628)
2004	($220)	($500)	($6.90)	($726)	$1	$3	$1	($724)
2005	($241)	($585)	($8.61)	($835)	$1	$2	$0	($833)
2006	($264)	($682)	($10.54)	($956)	$2	($0)	$0	($955)
2007	($289)	($790)	($12.77)	($1,092)				($1,092)
2008	($317)	($908)	($15.29)	($1,240)				($1,240)
2009	($347)	($1,037)	($18.12)	($1,402)				($1,402)
2010	($379)	($1,175)	($21.16)	($1,575)				($1,575)

Table C-16: Projected Cash Flow (Post-1986 Non-market Investment) for the Public Service Superannuation Fund, 1987-2010

(millions of current dollars)

Period ending on Dec. 31,	Post-1986 Non-mkt Investm't	Post-1986 Non-mkt Retired	Cumulative Post-1986 Non-mkt	Non-mkt Rate	Post-1986 Non-mkt Interest	Post-1986 Net Cash Flow
1987	$205		$205	10.50%	$11	($194)
1988			$205		$21	$21
1989			$205		$21	$21
1990			$205		$21	$21
1991			$205		$21	$21
1992			$205		$21	$21
1993			$205		$21	$21
1994			$205		$21	$21
1995			$205		$21	$21
1996			$205		$21	$21
1997			$205		$21	$21
1998			$205		$21	$21
1999			$205		$21	$21
2000			$205		$21	$21
2001			$205		$21	$21
2002			$205		$21	$21
2003			$205		$21	$21
2004			$205		$21	$21
2005			$205		$21	$21
2006			$205		$21	$21
2007		$205	$0		$11	$215
2008		$0	$0		$0	$0
2009		$0	$0		$0	$0
2010		$0	$0		$0	$0

Table C-17: Projected Debt Investment for the Superannuation Adjustment Fund, 1987-2010

(millions of current dollars)

Period ending on Dec. 31,	Objective Debt Value	New Debt Investm't	Min. Debt Share on New Investment	Return on New L.T. Debt	New Debt Interest Income	Cumulative New Debt Investment
1987	$682	$0		9.00%	$0	$0
1988	$797	$235	1.00	8.00%	$9	$235
1989	$907	$101	0.40	7.00%	$22	$337
1990	$1,012	$42	0.20	6.75%	$27	$378
1991	$1,112	$42	0.20	6.50%	$30	$420
1992	$1,209	$54	0.20	6.50%	$33	$475
1993	$1,299	$45	0.20	6.50%	$36	$520
1994	$1,382	$44	0.20	6.50%	$39	$563
1995	$1,458	$45	0.20	6.50%	$42	$608
1996	$1,521	$27	0.20	6.50%	$45	$635
1997	$1,570	$163	0.20	6.50%	$51	$798
1998	$1,593	$177	0.20	6.50%	$62	$975
1999	$1,584	$113	0.20	6.50%	$71	$1,087
2000	$1,541	$95	0.20	6.50%	$78	$1,182
2001	$1,457	$65	0.20	6.50%	$83	$1,247
2002	$1,321	($136)	0.20	6.50%	$81	$1,111
2003	$1,127	($193)	0.20	6.50%	$69	$918
2004	$868	($258)	0.20	6.50%	$52	$660
2005	$530	($336)	0.20	6.50%	$29	$324
2006	$101	($324)	0.20	6.50%	$1	$0
2007	$0	$0	0.20	6.50%	$0	$0
2008	$0	$0	0.20	6.50%	$0	$0
2009	$0	$0	0.20	6.50%	$0	$0
2010	$0	$0	0.20	6.50%	$0	$0

Table C-18: Projected Equity and Other Investment for theSuperannuation Adjustment Fund, 1987-2010

(millions of current dollars)

Period ending on Dec. 31,	New Equity Investm't	Capital Gains	Dividend Income	Market Value at Yearend	Equity Ratio	New Other Investm't	Yield on Other Investm't	Income on Other Investm't	Cumulative Other Investm't
1987	$0	$0	$0	$0	0.00	$0	7.00%	$0	$0
1988	$0	$0	$0	$0	0.00	$0	7.00%	$0	$0
1989	$122	$4	$2	$126	0.06	$30	7.00%	$1	$30
1990	$133	$12	$8	$271	0.12	$33	7.00%	$3	$64
1991	$135	$21	$14	$427	0.17	$34	7.00%	$6	$97
1992	$174	$32	$21	$634	0.24	$44	7.00%	$8	$141
1993	$143	$46	$28	$822	0.28	$36	7.00%	$11	$177
1994	$140	$58	$36	$1,020	0.33	$35	7.00%	$14	$212
1995	$145	$71	$44	$1,236	0.38	$36	7.00%	$16	$248
1996	$36	$81	$50	$1,353	0.40	$70	7.00%	$20	$318
1997	($45)	$86	$53	$1,394	0.40	$57	7.00%	$24	$375
1998	($69)	$88	$54	$1,414	0.40	($6)	7.00%	$26	$370
1999	($98)	$89	$55	$1,405	0.40	($11)	7.00%	$25	$359
2000	($126)	$87	$54	$1,366	0.40	($18)	7.00%	$24	$340
2001	($159)	$84	$51	$1,290	0.40	($28)	7.00%	$23	$312
2002	($200)	$77	$48	$1,167	0.40	($36)	7.00%	$21	$276
2003	($242)	$68	$42	$994	0.40	($43)	7.00%	$18	$233
2004	($287)	$55	$34	$762	0.40	($57)	7.00%	$14	$176
2005	($340)	$38	$24	$460	0.39	($73)	7.00%	$10	$104
2006	($476)	$14	$9	$0	0.00	($104)	7.00%	$4	($0)
2007	$0	$0	$0	$0	0.00	($0)	7.00%	$0	($0)
2008	$0	$0	$0	$0	0.00	($0)	7.00%	$0	($0)
2009	$0	$0	$0	$0	0.00	($0)	7.00%	$0	($0)
2010	$0	$0	$0	$0	0.00	($0)	7.00%	$0	($0)

Table C-19: Total Investable Funds and Accumulated Portfolio Value for theSuperannuation Adjustment Fund, 1987-2010

(millions of current dollars)

Period ending on Dec. 31,	Deficit Interest	Net Cash Flow	Post-1986 Net Cash Flow	New Debt Interest Income	Dividend Income	Income on Other Investm't	Total New Investable Funds	Act. Total Portfolio Value
1987	$0	$205	($194)	$0	$0	$0	$0	$1,515
1988	$0	$194	$21	$9	$0	$0	$235	$1,771
1989	$0	$206	$21	$22	$2	$1	$253	$2,016
1990	$0	$148	$21	$27	$8	$3	$208	$2,249
1991	$0	$140	$21	$30	$14	$6	$211	$2,471
1992	$0	$189	$21	$33	$21	$8	$272	$2,687
1993	$0	$126	$21	$36	$28	$11	$223	$2,886
1994	$0	$108	$21	$39	$36	$14	$218	$3,070
1995	$0	$103	$21	$42	$44	$16	$226	$3,240
1996	$0	($3)	$21	$45	$50	$20	$133	$3,380
1997	$0	$25	$21	$51	$53	$24	$175	$3,489
1998	$0	($61)	$21	$62	$54	$26	$103	$3,540
1999	$0	($169)	$21	$71	$55	$25	$4	$3,521
2000	$0	($227)	$21	$78	$54	$24	($50)	$3,425
2001	$0	($302)	$21	$83	$51	$23	($123)	$3,239
2002	$0	($542)	$21	$81	$48	$21	($372)	$2,935
2003	$0	($628)	$21	$69	$42	$18	($477)	$2,504
2004	$0	($724)	$21	$52	$34	$14	($602)	$1,928
2005	$0	($833)	$21	$29	$24	$10	($749)	$1,179
2006	$0	($955)	$21	$1	$9	$4	($919)	$224
2007	$1	($1,092)	$215	$0	$0	$0	($876)	($881)
2008	$58	($1,240)	$0	$0	$0	$0	($1,240)	($2,132)
2009	$139	($1,402)	$0	$0	$0	$0	($1,402)	($3,534)
2010	$230	($1,575)	$0	$0	$0	$0	($1,575)	($5,109)

Table C-20: Projected Flow of New Funds into Marketable Securities for the Superannuation Adjustment Fund, 1987-2010
(millions of 1987 dollars)

Period Ending Dec. 31,	Actuarial Projections Cont - Ben	Int. Income Non-mkt Debt	Principal Repayments Non-mkt Debt	Interest & Dividends Post-1987	Total Funds Available To Invest
1986	$0	$0	$0	$0	$0
1987	$0	$0	$0	$0	$0
1988	$27	$169	$0	$0	$196
1989	$12	$173	$26	$9	$219
1990	($13)	$165	$0	$23	$175
1991	($37)	$160	$18	$33	$174
1992	($62)	$153	$86	$41	$218
1993	($85)	$137	$68	$51	$170
1994	($107)	$127	$82	$60	$161
1995	($126)	$114	$107	$67	$162
1996	($148)	$97	$63	$75	$88
1997	($171)	$87	$117	$81	$114
1998	($197)	$65	$105	$88	$61
1999	($225)	$48	$80	$94	($3)
2000	($256)	$36	$88	$97	($35)
2001	($289)	$24	$92	$96	($77)
2002	($324)	$13	$0	$94	($217)
2003	($363)	$13	$1	$86	($263)
2004	($404)	$12	$1	$72	($319)
2005	($449)	$12	$1	$54	($382)
2006	($497)	$11	$1	$33	($452)
2007	($548)	$11	$103	$7	($428)
2008	($602)	$5	$0	$0	($596)
2009	($657)	$0	$0	$0	($657)
2010	($713)	$0	$0	$0	($713)
Five-year Averages					
1988-90	$9	$169	$9	$11	$197
1991-95	($84)	$138	$72	$50	$177
1996-00	($199)	$67	$91	$87	$45
2001-05	($366)	$15	$19	$80	($252)
2006-10	($603)	$5	$21	$8	($569)

Table C-21: Allocation of New Funds to Invested in Marketable Securities for the Superannuation Adjustment Fund, 1987-2010

(millions of 1987 dollars)

Period Ending Dec. 31,	Total New Investable Funds	New Debt Investm't	New Equity Investm't	New Other Investm't	Non-mkt Principal Outstanding	Cumulative New Debt Investm't	Equity Mkt Value at Yearend	Cumulative Other Investm't	Act. Total Portfolio Value
1987	$0	$0	$0	$0	$1,505	$0	$0	$0	$1,515
1988	$226	$226	$0	$0	$1,445	$226	$0	$0	$1,701
1989	$235	$94	$113	$28	$1,368	$312	$116	$28	$1,868
1990	$186	$37	$119	$30	$1,323	$339	$243	$57	$2,015
1991	$183	$37	$117	$29	$1,265	$365	$371	$85	$2,147
1992	$229	$46	$147	$37	$1,139	$399	$533	$119	$2,260
1993	$181	$36	$116	$29	$1,033	$422	$668	$144	$2,346
1994	$171	$34	$110	$27	$915	$442	$801	$166	$2,411
1995	$172	$34	$110	$27	$777	$462	$938	$188	$2,458
1996	$97	$19	$26	$51	$688	$465	$992	$233	$2,478
1997	$124	$115	($32)	$41	$547	$565	$987	$266	$2,471
1998	$70	$121	($47)	($4)	$423	$667	$968	$253	$2,423
1999	$3	$74	($64)	($7)	$329	$719	$929	$237	$2,328
2000	($32)	$61	($81)	($12)	$230	$755	$873	$217	$2,188
2001	($76)	$40	($98)	($17)	$130	$769	$796	$193	$1,999
2002	($222)	($81)	($119)	($21)	$125	$662	$696	$165	$1,750
2003	($275)	($111)	($139)	($25)	$120	$529	$573	$134	$1,443
2004	($335)	($144)	($160)	($32)	$116	$367	$424	$98	$1,073
2005	($403)	($181)	($183)	($39)	$111	$174	$248	$56	$634
2006	($478)	($168)	($247)	($54)	$106	$0	$0	$0	$117
2007	($440)	$0	$0	$0	$0	$0	$0	$0	($442)
2008	($602)	$0	$0	$0	$0	$0	$0	$0	($1,034)
2009	($657)	$0	$0	$0	$0	$0	$0	$0	($1,656)
2010	($713)	$0	$0	$0	$0	$0	$0	$0	($2,314)

Five-year Average Flows

1988-90	$216	$119	$77	$19
1991-95	$187	$37	$120	$30
1996-00	$52	$78	($40)	$14
2001-05	($262)	($95)	($140)	($27)
2006-10	($578)	($34)	($49)	($11)

Five-year Period End Asset Values

1990	$1,323	$339	$243	$57	$2,015
1995	$777	$462	$938	$188	$2,458
2000	$230	$755	$873	$217	$2,188
2005	$111	$174	$248	$56	$634
2010	$0	$0	$0	$0	($2,314)

C.5 Canada Pension Plan (CPP)

1. Net contributions minus benefits for 1987 through 2010 correspond to the cash flow projections contained in Statutory Actuarial Reports No. 10 as at December 31, 1985 prepared by the Department of Insurance, Canada. The fund projections appear in Table 4 of that Report and are reproduced in Table C-22. They reflect the recent increase in the schedule of contribution rates for future years. The assumptions and procedures for the projection are presented in Appendix B of the Report.
2. The interest, principal and principal retired data for pre-1987 CRF (non-market) investments in the years 1987 through 2010, shown in Table C-22, are based on the debt maturity and interest payment schedules provided by the Ministry of Treasury and Economics dated April 10, 1987.
3. For 1987, the net cash flow is assumed to be invested in non-marketable debentures at a 10.5% average interest rate. See Table C-23
4. It is assumed that in 1987, the Ontario government will not borrow any CPP funds. Hence, post-1986 non-market investment is assumed to be zero - the 1987 Ontario portion of the CPP does not increase non-market investment. Commencing in 1988, the Ontario portion of the CPP is assumed to be taken up by the province in a way that permits it to be invested in marketable securities on the same basis as TSF, PSSF and SAF funds are invested.
5. The projected investment data for the CPP are shown in Tables C-24 through C-26. Table C-24 shows projected debt investment. Table C-25 shows projected equity and other investment. Table C-26 shows the total new investable funds and the actual total portfolio value. The components of the total new investable funds, which are drawn from the previous tables, also are shown. The annual and 5-year average flows to marketable securities are summarized in Table C-27. Both nominal and real (1987 dollars) flows are shown. Table C-28 shows the allocation of new funds, giving both flows and cumulative assets by investment type.

Table C-22: Projected Cash Flow (Net Contributions and 1986 Assets) for the Ontario Portion of the Canada Pension Plan, 1987-2010

(millions of current dollars)

Period ending on Dec. 31,	Contrib's	Benefits & Expenses	Net Cash Flow from Province	New Loans to Prov.	Ontario Portion	Principal Retired	Non-mkt Principal Outstanding	Interest Payments	Net Cash Flow
1987	$5,414	$6,780	($1,366)	($1,366)	($690)	$295	$14,432	$1,530	$1,135
1988	$6,071	$7,867	($1,796)	($1,796)	($907)	$395	$14,037	$1,510	$998
1989	$6,837	$8,884	($2,047)	($2,047)	($1,034)	$445	$13,591	$1,482	$894
1990	$7,644	$9,775	($2,131)	($2,131)	($1,076)	$476	$13,115	$1,446	$846
1991	$8,475	$10,576	($2,101)	($2,101)	($1,061)	$505	$12,611	$1,408	$851
1992	$9,233	$11,381	($2,148)	($2,148)	($1,085)	$527	$12,084	$1,371	$813
1993	$10,111	$12,253	($2,142)	($2,142)	($1,082)	$573	$11,511	$1,331	$823
1994	$11,043	$13,256	($2,213)	($2,213)	($1,118)	$678	$10,833	$1,285	$845
1995	$12,075	$14,359	($2,284)	($2,284)	($1,153)	$762	$10,071	$1,224	$833
1996	$13,214	$15,550	($2,336)	($2,336)	($1,180)	$824	$9,247	$1,155	$800
1997	$14,412	$16,827	($2,415)	($2,415)	($1,220)	$893	$8,353	$1,080	$754
1998	$15,693	$18,125	($2,432)	($2,432)	($1,228)	$892	$7,462	$1,000	$663
1999	$17,046	$19,517	($2,471)	($2,471)	($1,248)	$1,013	$6,449	$910	$676
2000	$18,555	$21,038	($2,483)	($2,483)	($1,254)	$509	$5,940	$819	$74
2001	$20,216	$22,669	($2,453)	($2,453)	($1,239)	$649	$5,291	$725	$135
2002	$21,939	$24,361	($2,422)	($2,422)	($1,223)	$1,398	$3,893	$614	$789
2003	$23,870	$26,143	($2,273)	($2,273)	($1,148)	$1,156	$2,737	$430	$438
2004	$25,879	$28,043	($2,164)	($2,164)	($1,093)	$1,259	$1,478	$283	$450
2005	$28,073	$30,098	($2,025)	($2,025)	($1,023)	$1,062	$415	$129	$169
2006	$30,412	$32,400	($1,988)	($1,988)	($1,004)	$415	$0	$25	($564)
2007	$32,923	$34,906	($1,983)	($1,983)	($1,001)				($1,001)
2008	$35,602	$37,623	($2,021)	($2,021)	($1,021)				($1,021)
2009	$38,411	$40,590	($2,179)	($2,179)	($1,100)				($1,100)
2010	$41,442	$43,844	($2,402)	($2,402)	($1,213)				($1,213)

Table C-23: Projected Cash Flow (Post-1986 Non-market Investment) for the Ontario Portion of the Canada Pension Plan, 1987-2010
(millions of current dollars)

Period ending on Dec. 31,	Post-1986 Non-mkt Investm't	Post-1986 Non-mkt Retired	Cumulative Post-1986 Non-mkt	Non-mkt Rate	Post-1986 Non-mkt Interest	Post-1986 Net Cash Flow
1987	$0		$0	10.50%	$0	$0
1988			$0		$0	$0
1989			$0		$0	$0
1990			$0		$0	$0
1991			$0		$0	$0
1992			$0		$0	$0
1993			$0		$0	$0
1994			$0		$0	$0
1995			$0		$0	$0
1996			$0		$0	$0
1997			$0		$0	$0
1998			$0		$0	$0
1999			$0		$0	$0
2000			$0		$0	$0
2001			$0		$0	$0
2002			$0		$0	$0
2003			$0		$0	$0
2004			$0		$0	$0
2005			$0		$0	$0
2006			$0		$0	$0
2007		$0	$0		$0	$0
2008		$0	$0		$0	$0
2009		$0	$0		$0	$0
2010		$0	$0		$0	$0

Table C-24: Projected Debt Investment for the Ontario Portion of the Canada Pension Plan, 1987-2010

(millions of current dollars)

Period ending on Dec. 31,	Objective Debt Value	New Debt Investm't	Min. Debt Share on New Investm't	Return on New L.T. Debt	New Debt Interest Income	Cumulative New Debt Investment
1987	$6,494	$0		9.00%	$0	$0
1988	$6,784	$1,040	1.00	8.00%	$42	$1,040
1989	$7,044	$402	0.40	7.00%	$97	$1,442
1990	$7,309	$202	0.20	6.75%	$118	$1,644
1991	$7,606	$214	0.20	6.50%	$132	$1,859
1992	$7,928	$219	0.20	6.50%	$146	$2,078
1993	$8,288	$233	0.20	6.50%	$161	$2,311
1994	$8,672	$252	0.20	6.50%	$176	$2,562
1995	$9,078	$265	0.20	6.50%	$193	$2,827
1996	$9,515	$274	0.20	6.50%	$211	$3,101
1997	$9,977	$283	0.20	6.50%	$229	$3,384
1998	$10,475	$286	0.20	6.50%	$247	$3,670
1999	$10,996	$877	0.20	6.50%	$285	$4,548
2000	$11,539	$1,052	0.20	6.50%	$348	$5,600
2001	$12,109	$1,218	0.20	6.50%	$422	$6,818
2002	$12,713	$2,002	0.20	6.50%	$526	$8,820
2003	$13,356	$1,799	0.20	6.50%	$650	$10,619
2004	$14,047	$1,950	0.20	6.50%	$772	$12,569
2005	$14,792	$1,808	0.20	6.50%	$894	$14,377
2006	$15,583	$1,206	0.20	6.50%	$992	$15,583
2007	$16,436	$853	0.20	6.50%	$1,059	$16,436
2008	$17,352	$916	0.20	6.50%	$1,116	$17,352
2009	$18,308	$956	0.20	6.50%	$1,177	$18,308
2010	$19,292	$984	0.20	6.50%	$1,240	$19,292

Table C-25: Projected Equity and Other Investment for the Ontario Portion of the Canada Pension Plan, 1987-2010

(millions of current dollars)

Period ending on Dec. 31,	New Equity Investm't	Capital Gains	Dividend Income	Market Value at Yearend	Equity Ratio	New Other Investm't	Yield on Other Investm't	Income on Other Investm't	Cumulative Other Investm't
1987	$0	$0	$0	$0	0.00	$0	7.00%	$0	$0
1988	$0	$0	$0	$0	0.00	$0	7.00%	$0	$0
1989	$483	$16	$10	$499	0.03	$121	7.00%	$4	$121
1990	$648	$53	$34	$1,199	0.07	$162	7.00%	$14	$283
1991	$686	$94	$64	$1,980	0.12	$172	7.00%	$26	$454
1992	$700	$147	$96	$2,826	0.16	$175	7.00%	$38	$629
1993	$746	$208	$132	$3,780	0.21	$187	7.00%	$51	$816
1994	$806	$272	$173	$4,858	0.25	$201	7.00%	$64	$1,017
1995	$846	$343	$218	$6,048	0.30	$212	7.00%	$79	$1,229
1996	$878	$422	$268	$7,347	0.35	$220	7.00%	$94	$1,448
1997	$905	$507	$322	$8,759	0.40	$226	7.00%	$109	$1,674
1998	($17)	$569	$361	$9,311	0.40	$1,161	7.00%	$158	$2,836
1999	($142)	$601	$382	$9,770	0.40	$834	7.00%	$228	$3,670
2000	($148)	$630	$400	$10,252	0.40	$181	7.00%	$263	$3,851
2001	($155)	$661	$420	$10,758	0.40	$190	7.00%	$276	$4,041
2002	($157)	$694	$441	$11,296	0.40	$201	7.00%	$290	$4,243
2003	($158)	$729	$463	$11,867	0.40	$214	7.00%	$304	$4,457
2004	($152)	$766	$487	$12,481	0.40	$230	7.00%	$320	$4,687
2005	($144)	$807	$513	$13,144	0.40	$248	7.00%	$337	$4,935
2006	($147)	$850	$540	$13,847	0.40	$264	7.00%	$355	$5,199
2007	($137)	$896	$569	$14,605	0.40	$284	7.00%	$374	$5,483
2008	($131)	$945	$601	$15,420	0.40	$305	7.00%	$394	$5,788
2009	($148)	$997	$634	$16,269	0.40	$319	7.00%	$416	$6,107
2010	($178)	$1,052	$668	$17,142	0.40	$329	7.00%	$439	$6,436

Table C-26: Total Investable Funds and Accumulated Portfolio Value for the Ontario Portion of the Canada Pension Plan, 1987-2010

(millions of current dollars)

Period ending on Dec. 31,	Net Cash Flow	Post-1986 Net Cash Flow	New Debt Interest Income	Dividend Income	Income on Other Investm't	Total New Investable Funds	Act. Total Portfolio Value
1987	$1,135	$0	$0	$0	$0	$0	$14,432
1988	$998	$0	$42	$0	$0	$1,040	$15,076
1989	$894	$0	$97	$10	$4	$1,005	$15,653
1990	$846	$0	$118	$34	$14	$1,012	$16,241
1991	$851	$0	$132	$64	$26	$1,072	$16,903
1992	$813	$0	$146	$96	$38	$1,093	$17,617
1993	$823	$0	$161	$132	$51	$1,166	$18,417
1994	$845	$0	$176	$173	$64	$1,259	$19,270
1995	$833	$0	$193	$218	$79	$1,323	$20,174
1996	$800	$0	$211	$268	$94	$1,372	$21,144
1997	$754	$0	$229	$322	$109	$1,414	$22,171
1998	$663	$0	$247	$361	$158	$1,430	$23,279
1999	$676	$0	$285	$382	$228	$1,570	$24,437
2000	$74	$0	$348	$400	$263	$1,086	$25,643
2001	$135	$0	$422	$420	$276	$1,253	$26,909
2002	$789	$0	$526	$441	$290	$2,046	$28,252
2003	$438	$0	$650	$463	$304	$1,856	$29,680
2004	$450	$0	$772	$487	$320	$2,028	$31,215
2005	$169	$0	$894	$513	$337	$1,912	$32,872
2006	($564)	$0	$992	$540	$355	$1,323	$34,629
2007	($1,001)	$0	$1,059	$569	$374	$1,000	$36,524
2008	($1,021)	$0	$1,116	$601	$394	$1,091	$38,560
2009	($1,100)	$0	$1,177	$634	$416	$1,127	$40,684
2010	($1,213)	$0	$1,240	$668	$439	$1,134	$42,870

Table C-27: Projected Flow of New Funds into Marketable Securities for the Ontario Portion of the Canada Pension Plan, 1987-2010
(millions of 1987 dollars)

Period Ending Dec. 31,	Actuarial Projections Cont - Ben	Int. Income Non-mkt Debt	Principal Repayments Non-mkt Debt	Interest & Dividends Post-1987	Total Funds Available To Invest
1986	$0	$0	$0	$0	$0
1987	$0	$0	$0	$0	$0
1988	($871)	$1,450	$380	$0	$959
1989	($958)	$1,373	$412	$39	$867
1990	($964)	$1,295	$427	$100	$858
1991	($922)	$1,223	$438	$144	$884
1992	($912)	$1,154	$443	$186	$870
1993	($879)	$1,082	$466	$228	$896
1994	($878)	$1,009	$532	$270	$934
1995	($875)	$929	$578	$314	$945
1996	($865)	$847	$604	$359	$945
1997	($864)	$765	$633	$405	$939
1998	($840)	$684	$610	$452	$906
1999	($825)	$602	$670	$507	$954
2000	($801)	$523	$325	$571	$619
2001	($765)	$447	$400	$624	$708
2002	($729)	$366	$833	$667	$1,137
2003	($661)	$247	$666	$724	$977
2004	($608)	$158	$701	$789	$1,039
2005	($550)	$70	$571	$849	$940
2006	($522)	$13	$216	$906	$613
2007	($503)	$0	$0	$947	$444
2008	($495)	$0	$0	$971	$476
2009	($516)	$0	$0	$990	$474
2010	($549)	$0	$0	$1,009	$459
Five-year Averages					
1988-90	($931)	$1,373	$406	$46	$894
1991-95	($893)	$1,079	$492	$228	$906
1996-00	($839)	$684	$568	$459	$873
2001-05	($663)	$258	$634	$731	$960
2006-10	($517)	$3	$43	$964	$493

Table C-28: Allocation of New Funds to Invested in Marketable Securities for the Ontario Portion of the Canada Pension Plan, 1987-2010

(millions of 1987 dollars)

Period Ending Dec. 31,	Total New Investable Funds	New Debt Investm't	New Equity Investm't	New Other Investm't	Non-mkt Principal Outstanding	Cumulative New Debt Investm't	Equity Mkt Value at Yearend	Cumulative Other Investm't	Act. Total Portfolio Value
1987	$0	$0	$0	$0	$14,432	$0	$0	$0	$14,432
1988	$999	$999	$0	$0	$13,484	$999	$0	$0	$14,482
1989	$931	$373	$447	$112	$12,590	$1,336	$462	$112	$14,500
1990	$907	$181	$580	$145	$11,750	$1,473	$1,074	$253	$14,550
1991	$932	$186	$596	$149	$10,958	$1,615	$1,720	$395	$14,688
1992	$920	$184	$589	$147	$10,165	$1,748	$2,377	$529	$14,819
1993	$948	$190	$606	$152	$9,355	$1,878	$3,072	$663	$14,969
1994	$989	$198	$633	$158	$8,506	$2,012	$3,815	$799	$15,132
1995	$1,003	$201	$642	$161	$7,641	$2,145	$4,588	$932	$15,306
1996	$1,006	$201	$644	$161	$6,778	$2,273	$5,386	$1,062	$15,499
1997	$1,002	$200	$641	$160	$5,916	$2,397	$6,204	$1,186	$15,703
1998	$979	$196	($12)	$795	$5,106	$2,512	$6,372	$1,941	$15,930
1999	$1,038	$580	($94)	$552	$4,264	$3,007	$6,460	$2,427	$16,157
2000	$693	$672	($94)	$116	$3,794	$3,577	$6,549	$2,460	$16,381
2001	$773	$752	($96)	$117	$3,265	$4,208	$6,640	$2,494	$16,608
2002	$1,220	$1,194	($94)	$120	$2,322	$5,260	$6,736	$2,530	$16,847
2003	$1,069	$1,037	($91)	$123	$1,577	$6,118	$6,837	$2,568	$17,101
2004	$1,129	$1,086	($85)	$128	$823	$6,997	$6,948	$2,609	$17,377
2005	$1,028	$972	($77)	$133	$223	$7,733	$7,070	$2,655	$17,680
2006	$687	$627	($76)	$137	$0	$8,098	$7,196	$2,702	$17,995
2007	$502	$428	($69)	$143	$0	$8,252	$7,333	$2,753	$18,339
2008	$529	$444	($63)	$148	$0	$8,418	$7,480	$2,808	$18,706
2009	$528	$448	($70)	$150	$0	$8,581	$7,625	$2,863	$19,069
2010	$514	$446	($81)	$149	$0	$8,736	$7,763	$2,915	$19,414

Five-year Average Flows

1988-90	$946	$518	$342	$86
1991-95	$958	$192	$613	$153
1996-00	$944	$370	$217	$357
2001-05	$1,044	$1,008	($88)	$125
2006-10	$552	$479	($72)	$145

Five-year Period End Asset Values

1990	$11,750	$1,473	$1,074	$253	$14,550
1995	$7,641	$2,145	$4,588	$932	$15,306
2000	$3,794	$3,577	$6,549	$2,460	$16,381
2005	$223	$7,733	$7,070	$2,655	$17,680
2010	$0	$8,736	$7,763	$2,915	$19,414

C.6 Aggregate Projections

The projections for the TSF, PSSF and SAF have been aggregated and the results are presented in Tables C-29 and C-30. Table C-29 presents the annual and five-year average flows to marketable securities. Entries equal the sum of the corresponding entries in earlier tables for the individual funds. Flows are shown in real (1987) dollars.

Table C-30 shows the allocation of new funds, giving both flows and cumulative assets by investment type in 1987 dollars. Annual flows and five-year average flows are given. Entries equal the sum of the corresponding entries in the earlier tables for individual funds.

Similar aggregate projections for the TSF, PSSF, SAF and the CPP are presented in Tables C-31 and C-32. Table C-31 presents the annual and five-year average flows to marketable securities. Entries equal the sum of the corresponding entries in earlier tables for the individual funds. Flows are shown in real (1987) dollars.

Table C-32 shows the allocation of new funds, giving both flows and cumulative assets by investment type in 1987 dollars. Annual flows and five-year average flows are given. Entries equal the sum of the corresponding entries in earlier tables for the individual funds.

Table C-29: Projected Flow of New Funds into Marketable Securities for the Total of the TSF, PSSF and SAF, 1987-2010

(millions of 1987 dollars)

Period Ending Dec. 31,	Actuarial Projections Cont - Ben	Int. Income Non-market Debt	Principal Repaym'ts Non-mkt Debt	Interest & Dividends Post-1987	Total Funds Available To Invest
1986	$0	$0	$0	$0	$0
1987	$0	$0	$0	$0	$0
1988	$226	$1,771	$21	$0	$2,019
1989	$186	$1,814	$48	$90	$2,139
1990	$164	$1,751	$22	$236	$2,173
1991	$146	$1,697	$43	$348	$2,234
1992	$120	$1,640	$492	$454	$2,706
1993	$91	$1,548	$242	$572	$2,452
1994	$54	$1,478	$126	$695	$2,354
1995	$13	$1,415	$268	$812	$2,508
1996	($41)	$1,341	$198	$930	$2,427
1997	($109)	$1,277	$304	$1,058	$2,531
1998	($193)	$1,201	$302	$1,205	$2,516
1999	($292)	$1,118	$619	$1,363	$2,808
2000	($402)	$1,020	$588	$1,525	$2,731
2001	($522)	$928	$449	$1,690	$2,546
2002	($656)	$854	$318	$1,845	$2,361
2003	($801)	$758	$628	$1,986	$2,571
2004	($957)	$663	$639	$2,125	$2,470
2005	($1,120)	$545	$707	$2,266	$2,399
2006	($1,285)	$456	$756	$2,400	$2,327
2007	($1,443)	$383	$1,664	$2,527	$3,130
2008	($1,590)	$219	$406	$2,694	$1,729
2009	($1,726)	$105	$438	$2,849	$1,665
2010	($1,845)	$64	$443	$2,964	$1,626
		Five-year Averages			
1988-90	$192	$1,779	$30	$109	$2,110
1991-95	$85	$1,556	$234	$576	$2,451
1996-00	($207)	$1,191	$402	$1,216	$2,603
2001-05	($811)	$749	$549	$1,982	$2,469
2006-10	($1,578)	$245	$741	$2,687	$2,095

Table C-30: Allocation of New Funds to Invested in Marketable Securities for the Total of the TSF, PSSF, and SAF, 1987-2010

(millions of 1987 dollars)

Period Ending Dec. 31,	Total New Investable Funds	New Debt Investm't	New Equity Investm't	New Other Investm't	Non-market Principal Outstanding	Cumulative New Debt Investm't	Equity Mkt Value at Yearend	Cumulative Other Investm't	Act. Total Portfolio Value
1987	$0	$0	$0	$0	$17,371	$0	$0	$0	$17,381
1988	$2,335	$2,335	$0	$0	$16,665	$2,335	$0	$0	$19,030
1989	$2,293	$917	$1,101	$275	$16,023	$3,169	$1,138	$275	$20,648
1990	$2,295	$459	$1,469	$367	$15,474	$3,524	$2,687	$633	$22,371
1991	$2,355	$471	$1,507	$377	$14,966	$3,889	$4,318	$991	$24,225
1992	$2,843	$569	$1,820	$455	$13,996	$4,333	$6,320	$1,414	$26,134
1993	$2,600	$520	$1,664	$416	$13,281	$4,707	$8,221	$1,783	$28,070
1994	$2,499	$500	$1,599	$400	$12,705	$5,047	$10,111	$2,122	$30,072
1995	$2,659	$532	$1,701	$425	$12,008	$5,408	$12,161	$2,476	$32,146
1996	$2,593	$519	$1,152	$922	$11,404	$5,744	$13,703	$3,314	$34,265
1997	$2,720	$635	$462	$1,623	$10,714	$6,184	$14,578	$4,825	$36,407
1998	$2,721	$1,317	$413	$991	$10,049	$7,292	$15,426	$5,653	$38,532
1999	$3,023	$2,144	$375	$505	$9,090	$9,189	$16,260	$5,967	$40,620
2000	$2,955	$2,119	$328	$508	$8,194	$10,998	$17,070	$6,273	$42,648
2001	$2,765	$1,978	$277	$510	$7,468	$12,604	$17,850	$6,571	$44,604
2002	$2,571	$1,837	$220	$513	$6,897	$14,015	$18,595	$6,862	$46,471
2003	$2,785	$2,121	$152	$511	$6,035	$15,662	$19,292	$7,141	$48,217
2004	$2,691	$2,102	$84	$505	$5,192	$17,234	$19,937	$7,405	$49,836
2005	$2,617	$2,121	$2	$494	$4,309	$18,772	$20,517	$7,648	$51,292
2006	$2,542	$2,181	($109)	$479	$3,407	$20,318	$20,999	$7,869	$52,603
2007	$3,333	$3,151	$91	$532	$1,628	$22,782	$21,701	$8,134	$53,804
2008	$1,927	$1,975	$29	$525	$1,168	$23,987	$22,360	$8,384	$54,864
2009	$1,884	$2,016	($2)	$527	$691	$25,192	$23,006	$8,628	$55,860
2010	$1,848	$2,046	($20)	$535	$224	$26,386	$23,653	$8,871	$56,820

Five-year Average Flows

1988-90	$2,308	$1,237	$857	$214
1991-95	$2,591	$518	$1,658	$415
1996-00	$2,802	$1,347	$546	$910
2001-05	$2,685	$2,032	$147	$507
2006-10	$2,307	$2,274	($2)	$519

Five-year Period End Asset Values

1990	$15,474	$3,524	$2,687	$633	$22,371
1995	$12,008	$5,408	$12,161	$2,476	$32,146
2000	$8,194	$10,998	$17,070	$6,273	$42,648
2005	$4,309	$18,772	$20,517	$7,648	$51,292
2010	$224	$26,386	$23,653	$8,871	$56,820

Table C-31: Projected Flow of New Funds into Marketable Securities for the Total of the TSF, PSSF, SAF and CPP, 1987-2010
(millions of 1987 dollars)

Period Ending Dec. 31,	Actuarial Projections Cont - Ben	Int. Income Non-market Debt	Principal Repaym'ts Non-mkt Debt	Interest & Dividends Post-1987	Total Funds Available To Invest
1986	$0	$0	$0	$0	$0
1987	$0	$0	$0	$0	$0
1988	($645)	$3,222	$401	$0	$2,978
1989	($771)	$3,188	$461	$129	$3,005
1990	($801)	$3,046	$448	$336	$3,031
1991	($776)	$2,920	$481	$492	$3,118
1992	($792)	$2,793	$935	$640	$3,576
1993	($788)	$2,629	$708	$799	$3,348
1994	($823)	$2,487	$659	$965	$3,288
1995	($862)	$2,344	$846	$1,125	$3,453
1996	($906)	$2,188	$802	$1,289	$3,373
1997	($972)	$2,041	$937	$1,464	$3,470
1998	($1,034)	$1,885	$913	$1,657	$3,422
1999	($1,117)	$1,719	$1,289	$1,870	$3,762
2000	($1,203)	$1,542	$913	$2,096	$3,349
2001	($1,286)	$1,375	$850	$2,314	$3,253
2002	($1,386)	$1,220	$1,152	$2,512	$3,498
2003	($1,463)	$1,006	$1,294	$2,710	$3,548
2004	($1,565)	$820	$1,341	$2,914	$3,510
2005	($1,670)	$614	$1,279	$3,116	$3,339
2006	($1,807)	$469	$972	$3,306	$2,939
2007	($1,946)	$383	$1,664	$3,474	$3,574
2008	($2,085)	$219	$406	$3,665	$2,205
2009	($2,241)	$105	$438	$3,839	$2,139
2010	($2,395)	$64	$443	$3,973	$2,085
Five-year Averages					
1988-90	($739)	$3,152	$437	$155	$3,005
1991-95	($808)	$2,635	$726	$804	$3,357
1996-00	($1,046)	$1,875	$971	$1,675	$3,475
2001-05	($1,474)	$1,007	$1,183	$2,713	$3,429
2006-10	($2,095)	$248	$784	$3,651	$2,589

Table C-32: Allocation of New Funds to Invested in Marketable Securities for the Total of the TSF, PSSF, SAF and CPP, 1987-2010

(millions of 1987 dollars)

Period Ending Dec. 31,	Total New Investable Funds	New Debt Investm't	New Equity Investm't	New Other Investm't	Non-mkt Principal Outstand'g	Cumulative New Debt Investm't	Equity Mkt Value at Yearend	Cumulative Other Investm't	Act. Total Portfolio Value
1987	$0	$0	$0	$0	$31,803	$0	$0	$0	$31,813
1988	$3,334	$3,334	$0	$0	$30,149	$3,334	$0	$0	$33,512
1989	$3,225	$1,290	$1,548	$387	$28,613	$4,505	$1,600	$387	$35,148
1990	$3,202	$640	$2,049	$512	$27,224	$4,997	$3,761	$887	$36,921
1991	$3,287	$657	$2,103	$526	$25,924	$5,504	$6,038	$1,386	$38,913
1992	$3,763	$753	$2,408	$602	$24,161	$6,081	$8,697	$1,944	$40,953
1993	$3,548	$710	$2,271	$568	$22,636	$6,585	$11,294	$2,445	$43,039
1994	$3,488	$698	$2,232	$558	$21,212	$7,059	$13,926	$2,921	$45,204
1995	$3,662	$732	$2,344	$586	$19,648	$7,553	$16,749	$3,408	$47,452
1996	$3,598	$720	$1,796	$1,083	$18,182	$8,017	$19,089	$4,375	$49,764
1997	$3,722	$835	$1,103	$1,784	$16,630	$8,581	$20,782	$6,011	$52,110
1998	$3,699	$1,512	$401	$1,786	$15,155	$9,803	$21,798	$7,594	$54,462
1999	$4,061	$2,724	$281	$1,056	$13,353	$12,196	$22,720	$8,393	$56,777
2000	$3,649	$2,791	$233	$624	$11,988	$14,575	$23,619	$8,733	$59,029
2001	$3,538	$2,730	$181	$627	$10,733	$16,812	$24,491	$9,066	$61,212
2002	$3,791	$3,031	$127	$633	$9,219	$19,275	$25,331	$9,392	$63,318
2003	$3,854	$3,158	$61	$635	$7,612	$21,780	$26,129	$9,709	$65,317
2004	$3,820	$3,188	($1)	$633	$6,014	$24,232	$26,885	$10,014	$67,213
2005	$3,645	$3,093	($76)	$628	$4,532	$26,505	$27,586	$10,303	$68,972
2006	$3,229	$2,807	($186)	$616	$3,407	$28,416	$28,195	$10,570	$70,599
2007	$3,835	$3,580	$22	$674	$1,628	$31,035	$29,035	$10,887	$72,142
2008	$2,456	$2,419	($34)	$673	$1,168	$32,404	$29,841	$11,192	$73,571
2009	$2,412	$2,464	($72)	$677	$691	$33,773	$30,632	$11,490	$74,929
2010	$2,362	$2,492	($101)	$684	$224	$35,122	$31,416	$11,785	$76,234

Five-year Average Flows

1988-90	$3,253	$1,755	$1,199	$300
1991-95	$3,549	$710	$2,272	$568
1996-00	$3,746	$1,716	$763	$1,267
2001-05	$3,730	$3,040	$58	$631
2006-10	$2,859	$2,752	($74)	$665

Five-year Period End Asset Values

1990	$27,224	$4,997	$3,761	$887	$36,921
1995	$19,648	$7,553	$16,749	$3,408	$47,452
2000	$11,988	$14,575	$23,619	$8,733	$59,029
2050	$4,532	$26,505	$27,586	$10,303	$68,972
2010	$224	$35,122	$31,416	$11,785	$76,234

APPENDIX D INTERVIEW LIST

Name of Contact	Organization
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Mr. Ed Baker	Vice-President, Investments, Ontario HospitalAssociation
Mr. Peter Baxter	Executive Director, Investments, OMERS
Mr. Terry Bedard	Vice-President, Investments, Sun Life Assurance Company
Mr. Lee Bentley	Vice-Chairman, Royal Trust
Mr. Steve Browne	Vice-President Investments, Sun Life Assurance Co.
Ms. Sara Clodman	Government Relations Officer, Sun Life Assurance Company
Mr. Jim Cole	Vice-Chairman, Guardian Capital Group Ltd.
Mr. Donald Coxe	Director, Gordon Capital Corp.
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Mr. Tom Kierans	President, McLeod Young Weir
Mr. David Knight	Principal, Knight Bain Seath and Holbrook
Mr. Robert MacIntosh	President, Canadian Bankers' Association
Mr. Harry Malcolmson	Associate Director, Ontario Securities Commission
Mr. Bill Malouin	President, Canada Life Investment Ltd.
Mr. Rae McLeod	Senior Consultant on Pensions, Canadian Life & Health Insurance Assoc.
Mr. John McNeil	Executive Vice-President, Sun Life Assurance Company
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